



Agriculture occupies the prime place in the economic life of the Indian people. Indian Agriculture is a vast subject and it embraces a richness, range and variety of problems which have received particular attention, study and treatment by a large number of writers, foreign and Indian.

Professor C. B. Manoria is one of the few Indian Scholars, who have devoted a lifetime to the study of Indian Agriculture in all its various aspects and phases. He has rendered a great service to the interested people by writing this comprehensive and unbiased thesis. It is a creditable achievement.

The present work is chiefly meant to meet the needs of advanced students of M.A. (Economics and Geography) M. Com. and M. Sc., (Agriculture) and competitive examinations for Rural Economics, yet it is confidently claimed that the general reader, interested in Agriculture and its innumerable problems, will find every thing to satisfy him.

This is an extremely useful, upto date compendium on Indian Agriculture and we recommend it strongly to all serious students of the subject—Agriculture and its multifarious problems.

An outstanding achievement, an upto date treatise, this book cannot be too highly praised.

AGRICULTURAL PROBLEMS OF INDIA

C. B. MAMORIA, M.A., (GEOG.), M. COM.,

Professor, Maharana Bhupal College, Udaipur

Member, Faculty of Commerce, University

of Rajasthan, Jaipur

KITAB MAHAL

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FOREWORD

Prof. C. B. Mamoria has rendered a great service to all those who are interested in rural economics by writing this comprehensive and unexcelled thesis. He has brought together, in this scholarly survey, most of the available information that can be culled from government reports, books, published in England and available in the college and university libraries and presented it in such an able and analytical manner that university students and scholars and those who are now engaged in the Community Development work and the N. E. S. will find in it an extremely helpful and dependable reference book.

I congratulate him on this achievement.

Anyone who wants to understand the implications and significance of most of the recommendations of the First and Second Five Year Plans and the justification for the programme of the N. E. S. cannot do better than carefully study this book.

The study of "Rural Economics" is daily becoming more and more analytical and specialised and it is getting intermingled with the latest techniques of the science of Statistics. Hence our efforts to organise Agricultural Statistics and to found the Indian Society of Agricultural Statistics. This book will prove to be a good preparation for those students who wish to progress towards the study of Agricultural Statistics. The sciences of agriculture, forestry, fisheries, cattle-breeding and mining are rapidly getting differentiated from each other and highly developed and it is the duty of agriculturists to absorb and utilise their best teachings and results in their daily activities in practical agriculture. This thesis indicates the possibilities and the lines on which such marriage can and ought to be brought about between them and practical processes of work in Indian farming.

The practical economics of the production of foodgrains, commercial crops and other garden products has received ample consideration on the author. Such endemic disabilities as rural indebtedness and the problem of inadequate and costly rural credit, inefficient and too costly agricultural marketing and the too heavy and growing burden of taxation; the unrestricted, uncontrolled and unforeseeable vicissitudes of seasons, incidence of pests, cattle-epidemics have been pictured in detail, with all their historical background. The post-Independence measures made by Governments to tinker with or tackle them are reviewed critically.

The revolutionary removal of the blight of Zamindari System had condemned more than a hundred million peasants to uncertainty and unbearable rents and other exactions during the past centuries is pictured in detail. The latest efforts that so many of State Governments are making to protect the tenants of the peasant

proprietors; the older section of the traditionally Ryotwari areas and the newer section of the newly liberated Zamindari areas are all indicated scrupulously.

Agricultural organisation had hitherto been based on the thin rocks of absentee landlords (Zamindars, Talukdars, Malguzars, etc.), so cultivating peasants (either peasant proprietors or Zamindari tenants and agricultural workers. The traditional absentee Zamindars have been removed since 1947. So we are left with the cultivating peasants (whether proprietors or tenants of some proprietors) and agricultural workers. Certain social and economic problems arise in their mutual relations and their study is dependent upon contemporary developments and this thesis also makes a proper reference to this new phenomenon.

Moneylenders, merchants, processors and transport-organisations provide what I have called in my "Credo of World Peasantry" the "Public Services" and they exact too high a price for their ministrations. This thesis follows the orthodox line of study, and gives details of their deductions and the inadequate steps so far taken by Government to protect peasants from their exactions. The co-operative movement has begun to wrest a small portion of the processing industry from private enterprise. The recent promises of Government to encourage co-operated sugar mills have been stalled by exchange shortage.

Anyone who carefully studies this thesis will gain a scientific, valuable, panoramic view of the whole of our rural economy to enable him to approach the contemporary problems with which our peasants will have to come to grips during the next twenty or more years. It is the controversy as to the scale of cultivation, in relation to the developing technology. The Chinese have decided to utilise almost the scientific advances through the media of collective and co-operated farms but without mechanisation, owing to the scarcity of capital, abundant agrarian population and the absence of non-agricultural labour for surplus agricultural labour. India is experimenting with heavy agricultural machines, mostly on the hitherto uncultivated lands, granting the displaced persons or agricultural labour or on the huge estates of a few big landlords. So many wishfully think that if only co-operated collective farms could be organised, and necessary capital and "know-how" and tractor-drivers, etc. could be obtained, India could be fitted, and agricultural production stepped up through the economic scale. They ignore the significance of absence of alternative employment for those who would be displaced by such mechanisation, the competitive demand for national capital and "technical know-how" made by other sectors and the possibilities available for peasants to derive most of the economies of scale and partial and phased mechanisation through the development of Service Co-operatives, as and when the State is in a position to finance and support such co-operatives.

There is now a nation-wide controversy as to the advisability of assuming that small-holdings are necessarily uneconomical. The economy of small-holdings to be justified from the point of view of peasants themselves or from that of productivity of land? Which is

important to the nation; the production per peasant or the production per acre? Is a holding more intensively cultivated by a small peasant or by a large-sized co-operative or collective? What is more in the national interest that every peasant should have some land, however small, enjoy some days of free, independent non-exploitative, soul-satisfying labour, self-employment on his holding, whether owned or rented or that masses of wholly unemployed people should stalk the land, once collectives, co-operatives come to be organised, with or without full mechanisation or that even larger numbers of peasants should become wage-earners in co-operatives, albeit under the leadership of their technically chosen executives but under the orders of the salaried employees of the co-operative farms? Even communist countries are obliged to recognise the value of free peasantry. We of the Indian peasant congress it a premium on free, independent, self-employed, small-holders.

There is another equally important controversy agitating the mind of our nation., Is the peasant economy to be accepted as one of the progressive, socialist forces, conducive to decentralised, productive and free society and therefore deserving of all support from the State and Society or is it to be replaced by co-operative or collective farms and the peasant masses to be converted into the member-employees of the co-operative farms or mere employees of the collectives, and placed, in either case, under the control, direction and supervision of the salaried officials and masters of the management? Is peasant proprietorship to be considered anti-social institution or is it to be accepted as a functional, productive source of progressive incentives for greater exertion and production, initiative and enterprise? Are not the non-exploitative, self-employment characteristics of peasant proprietorship worthy of a fully socialist and free society?

There is a third controversy over an allied subject. Is the modern progressive and socialist society to work towards and welcome the development of the self-employed status for as many people as possible or is it to oppose, undermine or ignore the value of such a status and turn all individuals into salaried employees or wage-earners, under the employ of a collective or co-operative farm or State-managed enterprises? Is it not the primary objective of Socialism to help as many persons as possible to liberate themselves from employment under another set of people, whether they be their own elected chiefs or representatives of Government or the employees of corporations established by Government? When more than two hundred millions of peasants or fifty million peasant families are today self-employed, thanks to their work on their small-holdings or more than fifty per cent of total population of India, as estimated by our economists will have to be dependent upon agriculture even by 1971, will it be a progressive or socialist tendency to deprive them of their social freedom and their self-employment status, even when there are no other alternative employments with only wages or salaries, in any other walk of life?

This thesis has ably portrayed the history, ideals and present state of the co-operative movement in India. It has also given a brief account

of the suggestions made by the Rural Credit Survey of the Reserve Bank of India, the action taken thereon by Government and credit advanced by the Reserve Bank in pursuance of these recommendations. All are agreed that the future protection and progress of our peasantry can be best furthered by the all-round, rapid and mass-wise development of co-operative effort by peasants.

But is that co-operative effort to be entirely voluntary or not? Ministers at the centre and at the State levels reiterate their faith in the voluntariness of co-operative movement. Prime Minister Nehru said so vehemently at the co-operative congress (April 1958) that co-operatives should be *free* from bossing by Government. Yet the Central Minister for Co-operation warned us that co-operation has to fall in line with the National Plan, if need be, by conditioning that voluntariness. How is this contradiction to be overcome? In the controversy over the usefulness of bigger or smaller co-operative society, the co-operatives' opinion in favour of one society at least for every big village was dismissed in 1956 in favour of Governments' partiality for Reserve Bank's proposal to organise only bigger society for a group of villages. But Pt. Nehru has at last confessed now that it is best to have one society for one village. In this controversy, peasants and co-operators have been proved to be more in the right.

All are agreed that the State should take much interest in the development of the co-operative movement and offer adequate assistance and opportunities to the co-operative enterprises to grow and serve the peasantry in a dynamic manner. But does that necessitate as much sharing in the leadership and direction and bossing by governmental agencies over the whole activity of the co-operatives as the Reserve Bank suggested? Pt. Nehru does not agree with that. The tradition of all-out assistance offered by the Handloom Board to more than ten lakh members of the Weavers' Co-operatives is opposed to the Bank's suggestion. But the State Governments are athirst for gaining a stranglehold over the co-operatives.

Co-operative Farming has not proved to be a success in India, nor has it been an unqualified success in any of the communist countries. In fact more than 50% of co-op. farms have come to be disbanded in Poland and Yugoslavia. The economies of scale associated with large-scale farming need not be achieved only through co-operative farming. The experience of Japan, Denmark, Sweden, Switzerland, Ireland and United States has proved that through Service Co-operatives, almost all the economies of scale can be achieved by small peasants working separately on their own small holdings. It has also proved that Service Co-ops. can protect peasants from the exploitation of key services. To protect, strengthen and encourage peasants by clothing them with service co-operatives and insuring them in other ways from the vicissitudes of seasons and economic blizzards and yet organising co-operative farms on all the Government lands and other lands which would be obtained on the operation of the ceilings on land holdings and also through Bhoodan and thus enable these two processes of land use and peasant way of life to co-exist and compete in a wholesome manner and

to influence and benefit each other or to dismiss the well-trying and resilient peasant economy as of no more use and embrace the untried and unproved co-operative farming as the panacea for rural progress?

Shri Mamoria has indicated some of the urgent steps to be taken by Governments, Co-operatives, N. E. S. and Social workers to improve the social and economic conditions of our agricultural workers. He could not go into great details about the prospects for alternative employments; since even the Planning Commission is unable to hold out any hopes of eliminating their under-employment within the foreseeable future. It is admitted by all that the burden of population on land, which is another expression for the absence of alternative employments, is bound to be too heavy even right up to 1971. Therefore, will it not be the duty of rapidly developing industrial and commercial sectors of our national economy to agree to make adequate contribution to agricultural sector from out of their shares of national income and wealth, so as to make it possible for agricultural workers to earn higher wages, peasants to gain higher incomes, the better to enable them to maintain their unemployed and under-employed dependents on at least subsistence level and thus relieve our rural economy from its present curses of under-nourishment and all its social consequences? On the other hand) Government is only trying to further impoverish peasantry in order to prop up and develop industrial sector, through its one-sided use of the notorious "Scissors", in the same way as Soviets did in the U. S. S. R. Is this just or progressive?

Sri Mamoria has given ample details about the abortive efforts so far made to protect peasants from the vagaries of world markets and to assure them of a minimum level of prices. The rationale for stabilising agricultural prices to be on a par with industrial prices and for evaluating the services of peasantry on a par with these of non-agricultural classes, the professionals and at least proletariat was worked out in my book "Credo of the World Peasantry".

Yet another controversy has arisen over the question of ceilings. This thesis rightly favours the idea of fixing ceilings upon land holdings. But at what level should it be fixed? Is it to be fixed at three times as much as the basic holding, as indicated by the Draft Second Plan or five to ten times as suggested in my minority report to the Agrarian Reforms Committee or upto six times as indicated by the final Second Plan or at what level? An influential and growing body of opinion questions the justice of fixing the ceiling only upon agricultural holdings, while the Government refused to fix a ceiling even on annual incomes from professions of Rs. 30,00/. While leaving the actual decision to State Governments. Pt. Nehru is rushing State Governments to fix the ceiling over land-holdings only. And is the ceiling to be fixed on present holdings or only to prevent further acquisitions of lands? These and many such questions arise, as the pressure of demands made by industrial development, upon the surplus wealth produced by agriculture grows; for, after all the growth of non-agricultural development and wealth is so largely conditioned by the rate of growth of such surplus wealth that Government can extract from agriculture and peasants.

Prof. Mamoria has made a detailed study of land revenue systems, the incidence of land revenue and concluded that their burden has been growing disproportionately. Recently the burden of central excises, sales taxes and Stamp Duties has become too oppressive. The Mathai Commission's recommendations and the plan-mindedness of Parliament have provided justification for such growing burdens upon peasants. Is all this justifiable? Is it conducive to providing greater incentives for work, efficiency and enterprise on the part of peasants? Is it, on the other hand, tending and even intended to eliminate free peasantry? Our National Planners, Parliament and Governments have to make up their minds as to the fundamental issue, whether they want peasant economy to progress and prosper and the country to be profited through it or whether they are determined to prove such a policy through their various programmes of taxation, public expenditure, controls, as to make it unprofitable and unhappy for peasants to own, and cultivate their holdings and continue to function as independent, free and self-reliant and self-respecting entrepreneurs, producers and toilers on the land?

On what do the answers to these questions, controversies and campaigns depend? Not merely on the sweet will of Ministers and their governments, on the prejudices and predilections of the urban-minded officials or consumers, although they are always bound to have a great day in these matters, but also, on the nature and degree and temper of the peasant masses and much more so, on the effectiveness of their organisation? Prof. Mamoria has provided a good study of the revages caused by famines, droughts, floods, cyclones, frost and other vicissitudes of seasons and also by wasting erosion of the soil, pests and wild animals. The Government has only recently constituted the National Fund against natural calamities with contributions from some State Governments and without any grants from the Centre. Has not the time come for the Central Government to shoulder its primary or major responsibility in this regard?

Not even a beginning has been made to organise either contributory or State-financed crops and cattle Insurance Schemes !

What have the Governments done to provide the minimum of socio-economic infra-structure by way of rural communications, warehouses, organisation of chain of regulated markets, cheap and plentiful credit, rural water supply, compulsory elementary education, adult education in farming, fruit preservation facilities, etc. in order to enable our peasants to achieve greater efficiency, larger production, minimisation of wastage of farm-products and achievement of higher degree of proficiency in their profession. Is it enough to point at the N. E. S. and Community Development works; when they are still in their initial stages? Is not the provision of elementary education for all the rural people the first function of our Governments? Is it just to ask our peasants to compete with those of other countries, while our Governments fail to live up to 10% of the functions of the Governments of the Democratic West and even of the Soviet lands and the political aware-

ness and dynamism of their leaders and economic manoeuvrability of their own farm and family economics?.

The readers of this thesis have to supplement their knowledge by reading the literature produced by those of us who have been building up and working in peasant movement. That literature has of course remained beyond the ken of orthodox economists and university circles, who have somehow felt that they should not be *singed* by semi-political controversies. Centuries-old Zamindari system which held more than half of India in its iron grip came to be abolished, not principally because of the sudden philanthropy and revolutionary-mindedness of Congress Ministries of post-Independence era but especially because of the twenty-year long nation-wide peasant movement against that system through the leadership of the All India Kisan Congress; its thesis "Economic Conditions of Zamindari Ryots" its slogan "Down with Zamindari System" and its tremendous peasant marches, in which lakhs of peasants took part. Sri Mamoria has given a full account of legislation, licensing money-lenders, Debt Relief Acts passed by the Assemblies in 1936-39 and again since 1947. He has also indicated the nature and extent of the revolutionary move of declaring *moratorium* for agricultural debts. All that legislation was only the visible and legislative result of the great peasant movement carried on since 1931, demanding *moratorium*, scaling down of debts of peasants and cancellation of inherited debts of agricultural workers. The hated controls-regime came to be abandoned so *reluctantly* and in such a halting manner because of the bold and prolonged campaign carried on by both the peasant Congress and the All India Progressive De-control Association of both producers and consumers. Today, there are afoot the campaigns of the peasant Congress in favour of peasant proprietorship, protection of tenants and the assertion of the right of peasants to remain self-employed and economically free and to demand governmental assistance in their efforts to protect themselves from the exploitation of all those who own and command "Key Services" by organising Service Co-operatives. The peasant Congress is stoutly opposing the Govt's. move to ignore the rights and demands of peasant economy, and dispossess them through the mechanism of co-operative farming or Gram Dan, to turn them into proletariat but through co-operative Farms and place them at the mercy of the new army of techno-crats, bureaucrats all of them becoming the new privileged class. It is prepared to exhort peasants to try to progress from making the Service Co-operatives a success to organising and working successfully their own voluntarily created co-operative farms, if, where and when they feel like risking with such a venture. But peasants are bent upon resisting what they consider as the one-sided, doctrinaire determination of the Planning Commission to ignore their *millennium* old economy and to usher in a national campaign in favour of co-operative farming, keeping in reserve the sheathed-in weapon of coercing the minority when a majority in any place or region favours such a governmental leadership. The peasant Congress wants rural especially, peasant problems to be studied and viewed, in a truly national and all-sided manner and not merely from an urban and industrial and commercial angle, masquerading as the national standpoint

and certainly from a peasant point of view also. It may be of interest to the readers of this thesis to learn that the modern Indian peasant movement began its organisational efforts in 1923 and came to build up the All India Peasant Congress in 1935. The peasant Congress brought so much pressure to bear upon the Congress at successive sessions from 1936 to 1946 that the Congress Election Manifesto clearly favoured the abolition of the Zamindari system. In 1951-52 first General Elections, the peasant movement attempted to provide independent political leadership, through the activities of the Krishikar-Lok Party (KLP) and captured a number of seats in the Assemblies of Madras (Andhra) Rajasthan, Punjab and Bombay. The growing inroads of Communist Party among peasantry obliged the K. L. P. to merge with the Congress, in order to protect and strengthen their democracy and peasant economy. The latest moves of the Congress which are *inimical* to peasants' freedom, self-employed status and economy make the peasant Congress regret the absence of their own independent political platform. The Peasant Congress has accepted the *Gandhian* ideal of Democratic Kisan Mazdoor Kalakar, *Bedhijeevi* Raj (KMP Raj) and is determined to achieve a democratic socialist co-operative commonwealth, based mostly upon self-employed toilers. India alone, among the great countries of the world has the largest masses of self-employed, non-exploitative socialist-minded people and has unique opportunity of achieving co-operative commonwealth of free and independent producers, living in democratic socialist society.

It is clear that the orthodox economists have ignored the study of our books like "The Revolutionary Peasant", which has given the story of peasants' endeavours all over the world and more particularly in India to influence the course of events affecting rural economy and the "Modern Indian Peasant" and "Kisan Speaks" which have dealt with many of the problems, with which this comprehensive thesis concerns itself but from the dynamic stand-point of the peasant movement. They have yet to examine whether they have anything to learn from the "Credo of World Peasantry".

It is not so much for our Universities and N. P. C. to say if we are to go the Socialist or Capitalist or Co-operative or Gandhian way, to achieve progressive, prosperous and happy peasantry, and dynamic and productive agriculture. It is for the peasantry to decide whether they will allow their fate and future status and freedom to be decided either by the Governments or theoreticians of the non-agricultural interests. Therefore, these peasants, intellectuals hailing from rural areas and champions of democratic socialism will benefit much by making this authoritative thesis of Prof. Mamoria, their groundwork and source book.

I heartily congratulate Prof Mamoria on his monumental thesis and thank him for the great industry and scholarship he has devoted to the study of problems of peasantry and enrich their understanding of rural economics. The protagonists, followers and leaders of the peasant movement have much to learn from this thesis because it is about the

best and most comprehensive survey of the theories so far prevalent in University and governmental Circles, summary of the available official reports of Commissions and Committees and relevant historical material.

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N. G. Ranga, M. P.

INTRODUCTION

During the past about one hundred years successive governments in India paid considerable attention to agriculture. After the experience in the last century of famines followed by epidemics and loss of life a series of successive steps were taken for the improvement of agriculture. The realisation of risks to agriculture and live-stock industry through drought and erratic rainfall resulted in network of irrigation systems in the different parts of the country. To counteract agricultural indebtedness, a 'land improvement loans act' and an 'agriculturists' loans act' were passed in the years 1883 and 1884. A further helpful measure for agriculture was the passing of Co-operative Credit Societies in 1901. Colleges for teaching agriculture and Institutes for carrying out agricultural research and departments for extension work were instituted at the beginning of the century and these organisations steadily expanded both in size and content. On the recommendation of the Royal Commission on Agriculture the Imperial Council of Agricultural Research was created. To regulate production and distribution a Marketing Department was brought into existence. The circumstances during and after the war necessitated a further and more extensive and intensive governmental effort for increasing production and the consequent further expansion in all types of organisations for expanding food and agricultural production.

Thus looking back over half-a-century, it is found that in no department of human activity in India has so much been said and done as in agriculture. And yet, so little has been achieved. Obviously the size of the country and its growing population are too big compared to the efforts of the past. Perhaps, there is also oversimplification of the country's problems. There are also other and more potent factors responsible for the poor achievement. They are, firstly, the conflict between the ideas and ideals of the rulers and the ruled; secondly, there is lack of knowledge, either through disinclination or disregard of the factors contributing to the strength and foundations of the long-established agro-social fabric of rural India which forms more than 80% of India; thirdly, the superimposition of ideas, institutions and systems and practices found successful elsewhere without an adequate study of their suitability for and adaptability to the conditions that obtain in the countryside. These facts and the ever-growing need for organisation on social justice have not received the attention required.

Natural conditions, prehistoric and historic events are so interwoven that our rural communities and agriculture are the results of interactions between successive generations of men and waves of events, which have their roots in the five thousand years of the country's history. It is a composite of diverse types of customs and practices, suitably blended and adapted from time to time. Our agriculture is mostly a peasant system with a low subsistence level. It is for this reason

less influenced by the crests and troughs of political and economic that have been hitting the land. The more expanded and intensified system becomes, the more delicate the economic balance generally comes.

(Today, our agriculture is not merely a matter of domestic interest. It has a definite place in the economic structure of the world. Its well-being is as much influenced by events occurring several thousands of miles away as those occurring in the neighbourhood. It should be organised to maintain and advance its own interests and at the same time to retain and develop profitable contacts with the other organisations, industries and commerce.) This is what the report of the Planning Commission envisages. The principal objectives of the Commission are :—

1. To consider the organisation for production as the common and corporate concern of the peoples and to assist them in creating wealth with their own hands.
2. To meet the increasing demand for more production by reason of rise in the standard of living and an increase in population.
3. To stabilise production by eliminating or reducing the large gaps between the production in good and bad seasons.
4. To create a contented peasantry and labour force and to provide for supplementing or withdrawing labour according to conditions and needs.

The attainment of these objectives involves action separately and simultaneously in two principal directions. One is the introduction into a region or locality such changes as can be absorbed without facing difficulty. They may be minor in character but in the aggregate have produce substantial improvements in production if not to the individual but to the country as a whole. The other is assisting in the development in a more suitable region of those factors that will help in an evolutionary transformation of the existing system into the desired one. To make this a success a knowledge of several cognate problems is necessary.

There are conflicting interests within itself—interests of landlords and tenants, the agricultural industrial lenders and borrowers. Whether agriculturalers and sellers should proceed on the basis of big holdings and production in a region is still the important question about which there are different opinions and views. The pattern and structure of agriculture considered on the purpose of agriculture. On the social side there will be related problems, fundamentally involved in the system of tenures, rents, taxes, irrigation charges, social and communal. Director in the rural side and last but not the least, village administration. On the economic side, the resources of the peasants are limited and many places lack of transport facilities deprive agriculture of convenient markets for its products.

Agricultural problems are considered with the aid of factual information and knowledge, it will be easy to find and suggest solutions to several cognate problems and will enable the lifting of plans and programmes from the plane of doubt and controversy to the plane of constructive thought and action. It is particularly important that when changes are introduced the constructive worker will find past experience and factual knowledge helpful. This book by Shri C. J. Mamoria will be useful in that direction. It gives an historical description of efforts at the development of agriculture. It gives a review and view of the several official and non-official publications, so that various organisations and parties concerned can proceed to a detailed and realistic examination of the problems.

Dr. B. VISIIVANATHI, D. Sc., F. R. I. C

February 26, 1953.

PREFACE

Since the publication of the first edition of this book vast changes have taken place in the agricultural and non-agricultural sectors in the country, due to various schemes that had been launched and completed under the First Five Year Plan. In the First Plan emphasis was placed on agricultural expansion with a view to provide food and raw materials for the country needed to keep its population above subsistence level and its industries on a sound footing. In the scheme of agricultural productivity programmes, as envisaged in the Plan, had been included projects of three main types. The first centred round Land Reforms, Major Valley Projects and the Reclamation of Wastelands in the country. The emphasis had been on the adjustment of land use capacity for improved farm techniques. The programmes at the village level were complementary to the first type and were focussed on Community Projects, development of National Extension Service, Rural Reconstruction, expansion of Research and its application to the field. The third type of schemes constituted a link between the two and aimed at balanced economic development of the country.

The validity as well as the possibilities of achievements envisaged under the plans are subject to the serious limitation of the lack of precise knowledge and comprehension of the various factors that offer strong assistance to development in agriculture and in the rural sector of economy. The situation, therefore, clearly emphasises the need for a careful review and the searching analysis of the basic problems and policies in agriculture in their entirety. The object of this revised thesis has been to throw light on the nature of the varied problems facing our agricultural industry, together with the developments that have taken place in the country during the last half a decade as a result of the implementation of various measures under the First and Second Plan.

In bringing out this edition every care has been taken to delete outofdate and irrelevant matter, make necessary amendments in the light of the progress achieved during the First Plan, and make the thesis every comprehensive and reliable. For this purpose majority of the chapters have been rewritten. The arrangement of the chapters has also been reshuffled and the whole compendium has been divided into three sections, the first one dealing with Agricultural Production, the second one with Rural Finance, Co-operation and Marketing and the third one with Land Reforms and Policies. Statistical data have been brought uptodate with the help of the Statistical tables kindly supplied by Dr. S. R. Sen, Economic Adviser to the Ministry of Food and Agriculture, Government of India, and Dr. R. N. Poduval, Director and Deputy Economic and Statistical Adviser, Ministry of Food and Agriculture, for which both of them deserve my sincerest thanks. Government publications have also been freely made use of, along with the other material that has appeared in print for the last few years.

With all these additions and alterations, it is earnestly hoped that this edition, like its predecessor, will meet the genuine needs of the Advanced students of M. A. (Economics and Geography); M. Com., and M. Sc., (Agricultural) and Competitive examinations for their Rural Economics Paper.

My sincere and heart-felt thanks are due to Prof. N. G. Ranga, M. P. for writing an illuminating and thought-provoking Foreword to this thesis, in spite of his very busy time at the parliamentary session. My publishers are also to be thanked for brining out the book in such a nice print and get-up. I am also thankful to Shri R. K. Rawat for preparing the Bibliography.

Any suggestions for the further betterment of this book are cordially invited from the colleagues and learned authorities on the subject.

Mamoria Niwas,
199, Bhupalpura,
Udaipur.
50th June, 1958.

C. B. Mamoria

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CHAPTER I

NATURAL ENVIRONMENT

The natural resources of a country are of primary importance for the development of the economic life of its inhabitants. As a matter of fact natural resources determine the economic life of a nation. England, for example, is an industrial country but she owes her present position to her coastlines, rivers, the proximity of rich coal mines and iron fields, and the temperate climate. The U. S. A. is both an agricultural as well as industrial country. It possesses the requisites of industrialisation and at the same time its soil at some places is very fertile. Japan, too, is an industrial country only because there is no scope for agriculture as the very nature of the soil is not favourable for agriculture. Man may grow rich in knowledge and intelligence, however, much he may have overcome nature but ultimately he will have to depend on the materials supplied by Mother Nature for the development of his economic life. The physical environment is, in reality, the basis of all economic activity. In the case of India, a study of agricultural problems should start with an investigation of the physical factors. This subject may, therefore, be considered under the heads of geographical situation, physical features and the climate.

Geographical Situation

The Republic of India is a vast country stretching from 8° to 37° north latitude and from $66^{\circ}20'$ to 97° west longitude. It is one of the central and the largest of the three irregular peninsulas of Southern Asia, bridging the space between the semi-arid southern Asia and the most rice-producing and rice-exporting countries of the South-eastern Asia. It, therefore, occupies a central position between two distinctly different regions. It possesses a highly favourable position as regards the rest of the world for purposes of international trade. She stands at the head of the Indian Ocean at the very centre of the Eastern Hemisphere commanding trade routes running in all directions and connecting India with U. S. A. and Great Britain in the west, South Africa in south-west, Ceylon in the south, Australia, China, Japan and the Eastern Archipelago in the south-east and east.

It measures 2,000 miles from north to south and 1,700 miles from east to west.¹ Its shape has been defined by one of the

¹ Govt. of India, *India* ; 1956, p. 1.

greatest Greek geographers, Strabo as "rhomboidal rather than triangular with an acute apex pointing southward into the southern Indian Ocean."¹

It has an area of 12,66,890 sq. miles with 361.1 million people. It consists of 14 States with Andhra, Assam, Bihar, Bombay, Madhya Pradesh, Madras, Orissa, Punjab, Uttar Pradesh, West Bengal, Keral, Jammu and Kashmir, Mysore, Rajasthan, and 6 Union Territories of Delhi, Himachal Pradesh, Manipur, Tripura and Andaman-Nicobar and Laccadive, Minicoy and Amindivi Islands. Measured by the extent of its territory, India is the seventh largest country in the world. It is about thirteen times as large as U. K., eight times the size of Japan; a third of Canada, a seventh of the U. S. S. R., and a little less than a third of U. S. A.²

India is a geographical entity due to the separation from the rest of the continent of Asia by Himalayas. No country in the world is better demarcated by natural boundaries than India is. The northern borders are well defined by lofty mountains, with their snow-capped peaks penetrating far into the sky. There are no easy ways in and out through the mountain-wall which shuts off India from the rest of Asia but there are a few difficult passes. In the very north are the Zojila pass and the Shipki pass which lead out of Kashmir and Punjab respectively. Then from Shipki right down to Darjeeling there is no route across the mountain-wall. Towards the east the eastern off-shoots of the Himalayas are not much high but owing to deep gorges and ravines and impenetrable forests the ingress and outgress of the people to and from India and Burma is quite impossible. On the southern extremity Indian Ocean with its two arms, the Bay of Bengal in the east and the Arabian Sea in the west, washes her eastern, southern and western shores. In the south Ceylon represents itself as a lotus flower paying homage to the Indian antiquity.

India has a coastline of 3,500 miles,³ which gives one mile of coast to every 335 sq., miles of the area. The coastline is broken by only a small number of inlets and possesses a few islands around it. The continental shelf of the country is shallow and the shores are usually sandy and flat. The entire coast is serf-beaten and scoured by currents. Because of these physical characteristics, swift currents, presence of high Western Ghats, dangerous and expansive river mouths, shallow eastern seas and the dunes India possesses few ports and harbours in proportion to her coastline. The only so-called natural harbours are Bombay and Goa

¹ Quoted by Holdisch in *India*, p. 2-3.

² *India*, 1956, p. 1.

³ *India*, 1956, p. 1.

while Madras, Okha, Kandala, Vishakhapatnam and Cochin are artificial harbours made by enterprise of men. The Gulf of Cutch, the Gulf of Cambay, the backwaters of Cochin and Malabar, the Palk Strait and the Gulf of Mannar and the indentations on the mouths of the Ganga are the inlets and straits of India. These are all shallow and permit navigation when they are made deep by dredging operations. The broken and easily accessible coastline like that of Gujrat and Malabar, has facilitated the trade and intercourse with foreign countries and people have become progressive, ease-and peace-loving, but have developed a broad cosmopolitan outlook, and the nearness to sea has made them adventurous and seafaring. While the uniform coastline like that of Konkan make them simple and backward though good fisherfolk and seamen.

1. Physical Features

A region of such a vast extent has diversified configuration—plains, plateaus, hills and the mountains. The 1951 Census report divides the country into four topographical categories : (i) Mountainous area which rises over 7000', contains 10·7% of total area of the land. (ii) Hilly tracts, which is about 7000' above sea level, comprise 18·6% of all land in India. (iii) Plateau region, which lies between one to three thousand feet above sea level, measures 27·7% of the total land area and (iv) Plains region, which is below 1000' above sea level, contains 43% of the area. The following table gives the relevant figures for the country¹ :—

Zone	Total Land Area	Mts.	Hills	Plateaus	Plains
		(In Lakh of Acres)			
N. India	726	79	41	34	572
E. India	1,675	145	521	204	804
S. India	1,075	4	278	286	506
W. India	957	—	198	284	476
C. India	1,852	—	333	1,125	395
N. W. India	1,226	97	88	300	742
India (including J. & K.)	8,126	873	1,506	2,248	3,498

For our purpose we may divide the country into three well-defined regions : (i) The Great Mountain Zone of the Himalayas ; (ii) the Indo-Gangetic Plain ; and (iii) the Southern Tableland.

1. The Great Mountain Zone of the Himalayas,

(i) The Himalayas run for about 1,500 miles from the Pamir knot in the North West to the border of Assam—with a breadth

¹ *Census of India, 1951, Vol. I, Pt. I. A, p. 8.*

varying from 180 to 220 miles. They comprise of three parallel ranges interspersed with large plateaus and valleys like those of Kashmir and Kulu (which are fertile, extensive and of great scenic beauty). Some of the highest peaks in the world are found in these ranges, *e.g.*, Mt. Everest (29,028 ft.), Mt. Godwin Austin (28,250 ft.) and Kanchanjunga (28,146 ft.). The high altitudes limit travel only to a few passes—notably the Jelep and Natula. In the east these ranges are much lower and are known by different names in different parts such as the Patkoi and the Naga Hills in the north-east and the Jaintia, Khasi and Garo Hills in the South-West of Assam.

The high altitude of these mountains has for ages largely protected India from the rest of Asia so that they have checked the flow of barbarians into the country and let it develop its own art, industry and culture peacefully uninterrupted by the turmoil of the rest of the world.¹ These mountains are the source of our mighty river system, which bring us water and fertile soil. They are also covered with dense forests and provide us with a multitude of raw materials.

These mountains have influenced the life and character of the people living in this region. A hard life, isolation in valleys and difficulties of intercourse are characteristic features of this region so that people are sturdy, brave and liberty-loving, but often simple, backward, unprogressive, slow and stolid, conservative and hence sensitive to criticism, suspicious of strangers and superstitious, religious and strongly attached to home and family. The struggle for existence is hard and this develops in them the qualities of frugality, providence, industriousness, honesty and indifference to luxury.

2. The Indo-Gangetic Plain

Between the fold mountains of the north and the stable table-land of the peninsula lies the plain of Hindustan drained by three river systems. In the far west are the Bias and Sutlaj—tributaries of Indus draining into Arabian sea, in the west, Ganges and its tributaries, *viz.*, Jamuna, Gomti, Gogra, Gandak and Kosi in the east which flows into Bay of Bengal and Brahmaputra in the farther east. The Delhi Ridge divides it into two parts, *viz.*, the Western plain and the Eastern plain. The plain is a part of a great depression which is traceable across northern Africa, southern Europe, and southern Asia. It occupies an area of about 250,000 sq. miles and covers more than 1,500 miles from east to west with a width of 250 miles. It is wholly composed of the sediment deposited by the three rivers of Northern India. It is literally the dust of mountains.²

1 G. C. Clewell and H. T. Thompson, *Land and the People*, Vol. IV, p. 82.

2 T. W. Holderness, *Peoples and Problems of India*, p. 34.

No rock-bed is disclosed by borings of 500 to 1,000 ft. It is the region of the deepest soil in India. According to Oldham the maximum depth of the soil is 15,000 ft. near its southern edge. The deposits include great thickness of clay, loam, silt, etc.

This plain stretching from sea to sea across the whole of northern India contains nearly $\frac{1}{3}$ of the land of India (which is roughly equal to France, Italy, Germany and Austria in area) and $\frac{2}{3}$ of her population. The geographical advantages enjoyed by this plain are (1) fertile soil, (2) favourable climate, (3) the flat surface rendering possible the construction of roads and railways, (4) rivers and (5) mineral resources. An elaborate system of irrigation is met with. Agriculture, therefore, is the chief occupation of the people. The chief crops raised are rice, wheat, barley, gram, millets, oilseeds and sugarcane. It is interesting to note that due to extensive irrigation facilities dry and desolate tracts in this plain have been turned into populous spots of smiling plenty. This region has always been known for its inexhaustible people who wanted to enjoy its bounty either through sword or through the scale. Easy life in the plains brings about a desire for ease, pleasure and peace but the development of intellect breeds cunning or shrewdness and ambition. The people of the plains, therefore, tend to become politically-minded and intriguing. They are amenable to discipline but are not martial. They follow a diversity of occupations, commercial and industrial.

3. The Southern Tableland

This is an elevated plateau separated from the Indo-Gangetic plain by the Vindhya and Satpura ranges, ranging from 1,500 to 4,000 ft. It is the part of the earth's outer shell that is composed in great part of generally horizontal rock-beds that stand upon a firm and immovable foundation and that have for immense number of years remained so impassive amidst all the cataclysm and revolutions that have again and again changed the face of the earth.¹ The rocks composing this plateau are the various gneisses and other crystalline rocks and there is a great richness of wealth associated with them. Overlying these rocks is a great thickness of unfossiliferous rocks. The rift valley in which R. Narmada flows divides the whole plateau into two irregular parts. The northern is known as the *Malwa Plateau* and the southern as the *Deccan Tableland*. On the Malwa Plateau are to be found large areas of ravines which are quite unfit for cultivation. The soil which this trap yields is reddish to brownish soil, known as the *Black Cotton Soil*, which represents one of the most fertile soils of India.

The peninsula is flanked by coast ranges known as the Western and the Eastern Ghats. The former are much more considerable and form a gigantic and continuous sea-wall rising over 4,000

¹ D. N. Wadia, *Geology of India*, 1939, p. 2.

ft. above the sea level. They are pierced by no valley of any size and are unbroken except for a very curious gap (Pal Ghat) two hundred miles from its southern extremity on the Nilgiris. In the north also at two places Narbada and Tapi traverse these Ghats, *viz.*, at Thal Ghat and Bhore Ghat; through which the Southern and Central Railways pass.

The latter are much less formidable (only 1,500' high) and are broken and discontinuous and interrupted by many broad valleys of the rivers Mahanadi, Godavari, Kistna and Cauvery all of which flow into the Bay of Bengal. The rivers of the peninsula are rain-fed and, hence, they dry up during the summers. Their course is rapid and abruptly descends from a higher to a lower level and are little useful for irrigation. Irrigation is practised by tanks and reservoirs. The important products are millets, oilseeds, tobacco, sugarcane, pulses, rice and cotton. The principal trees are teak, sal, ebony, sandalwood, cinchona, coconuts and rubber.

Between the Ghats and the sea are the narrow strips of land on both the sides of the plateau. These have been formed by the wearing down of the oldest tableland into coastal plains. The western plains are very narrow and are 40 miles wide in some places. On this coast the monsoon floods bring enormous silts and help the growth of large forests and plantations. Coconut, palms, spices and cardamoms are largely grown. The shores of these plains have very few creeks and inlets which are joined by canals. They serve for good coastal traffic by boats and rafts.

The Eastern coastal plain is wider and the beach is well-beaten and is intersected by numerous swift-flowing rivers. The lower section of the plain consists of the deltas of the rivers and is entirely alluvial. While the upper section consists of plains in the courses of the rivers and hence is partly alluvial and partly peninsular. These plains produce good crops of rice, sugarcane and jute.

2. Climate

Owing to the great size and position and the diversities of relief, there are greater striking contrasts of meteorological conditions in different parts of the country than are probably found in any other part of the world. One part of the country lies north of the tropic and the other within it. In the north-west lies the great Thar Desert with an average annual rainfall of less than 5"; in the north-east are the Khasi hills with an average of 425" at Cherrapunji. Dras in Kashmir has recorded a minimum temperature of 49° F, while Ganganagar in Rajasthan has several times recorded a temperature of over 120°F. Hill-stations in the Himalayas (such as Simla) may be shrouded in cloud for days

together in August with humidities of 100% ; while in December they may be overrun by air of nearly 0% humidity. The mean maximum temperature at Cochin does not go above 89°F in any month nor the mean minimum below 73°F ; while at Ganganagar the mean maximum temperature goes up to 108°F in May and the mean minimum to 38°F in January.

The climate of India is influenced from outside by two adjoining areas. On the north the Himalayan Ranges shut it off from the cold climate of Central Asia and give it a continental climate, the characteristics of which are the prevalence of land winds, great dryness of air, large diurnal range of temperature and little or no precipitation. On the south, the ocean gives it a hot monsoon climate more typical of the tropical than of the temperate zone. "We always think of India as essentially a tropical country. And rightly so, for the whole area within mountain-wall must be considered as a unit, with a common type of climate throughout, that of tropical monsoon,"¹ the chief features of which are great uniformity of temperature and small diurnal range of temperature, great dampness of the air and more or less frequent rains. For the purposes of climatological studies India may be divided into two parts : Peninsular India and Northern India.

The whole of Peninsular India lies within the tropics and has a tropical climate, the variations of temperature between summer and winter being small. In winter the temperatures are controlled by the proximity of the Equator and the oceanic influences and it is between 65° to 80°F. But in summer the temperature rises over 90°F. near the tropics but in the neighbourhood of the oceans the climate is equable and the atmosphere is generally cloudy. In Malabar, the range of temperature is about 6°F and in South-Eastern Madras about 12°F. These features are specially observable on the wind-ward coasts, and they diminish with increasing distance from the sea.

Although the whole of Northern India lies beyond the Tropic of Cancer, but here the climatic conditions are more complex. The severity of heat or cold and the amount of moisture in the air, however, differ greatly in the different states and during different seasons. Punjab and West Rajasthan are very cold in winter and extreme hot in summer and air is generally devoid of moisture. But in West Bengal, Assam, Bihar and U. P. winter is cold and summer is moderately hot with plenty of moisture in the air. In winter the temperature in Northern India is controlled, apart from the slanting rays of the sun in winter, by the anticyclone that covers this area then. The temperatures vary between 55° and 65°F. The summer temperatures are largely the effect of

1 L. D. Stamp, *Asia*, p. 170.

(i) direct rays of the sun ; (ii) continentality emphasizing land influences far from the sea ; (iii) anticyclone, which maintains steadily rising temperatures ; and (iv) modification by the breaking of the S. W. Monsoons. The highest temperatures are to be found in the neighbourhood of M. P. ; Rajasthan, S. W. Punjab and West U. P.

Altitude tempers the heat of low latitudes. Upon the hills it is delightfully cool and refreshing even in mid-summer, but beyond a certain point the excess of cold forbids human habitation.

Seasons. India enjoys three well-marked seasons : (i) a cool dry season, *i.e.*, winter, when northerly trade dry winds prevail over the greater part of India, the skies are clear, the weather fine and the humidity low so that there is little or no rainfall except in the northern parts where moderate cyclone storms occasionally occur ; (ii) a hot dry season, *i.e.*, summer before the onset of rains, usually come suddenly with heavy thunderstorms, dry scorching westerly wind (known as *loo*) and (iii) a hot wet season, *i.e.*, rainy season, with winds of oceanic origin, high humidity, much cloud and frequent rain.

Monsoon and Rainfall *

The most important feature in the meteorology of India is the alternation of seasons known as monsoons. Strictly speaking, monsoons are seasonal winds whose direction, more or less reverse, twice during the year. Lying largely within the Tropics and with the great Asiatic continent to the north and the wide expanse of the Indian Ocean to the south, India furnishes the best example of a monsoon country. During winter the general flow of surface air over the country is from north to south, north-westerly in the plains of Hindustan, northerly in the central parts and north-easterly in the south of the Peninsula and the neighbouring seas. In this season the air over the country is mainly of continental origin and hence of low humidity and the season is known as the north-east or winter monsoon. In the summer months (June to Sept.) the general flow of winds is from the opposite direction from sea to land and the season is one of much humidity, cloud and rain. The direction of winds in the major parts of the Arabian Sea and the Bay of Bengal being south-westerly, the season is named the south-west monsoon season. The causes determining the monsoon currents are many and varied but the fundamental cause is undoubtedly the periodical excesses of heating of the land masses of Asia in summer and of cooling in winter compared to the water of the Indian Ocean and the China Sea.

(i) South-West Monsoon Seasons

Though agriculture is the main occupation in India, only about 20% of the area under cultivation receives artificial irrigation the remaining 80% depending entirely upon the mercy of rain every

year for the successful cultivation of various agricultural crops. In India the rain-giving monsoon is known as the south-west monsoon during which 75% of the total rainfall is recorded. The monsoon sets in June, spreads almost all over the country by July and August and gradually gets weakened in September. During this period rains are very important because they provide necessary moisture for agricultural operations for sowing of *Kharif* crops like cereals, pulses, sugarcane, cotton, oilseeds and jute, which account for more than 80% of the total area sown to crops. Thus the setting in of the south-west monsoon marks the beginning of the agricultural operations over a wide area. The south-west monsoon generally spreads through two branches, *viz.*, the Arabian Sea Branch and the Bay of Bengal Branch. The former brings rainfall to the Southern and Western parts of the country, but, as the monsoon advances, it penetrates further into the Central and North-West India. This branch of the monsoon comes first into the country in the southernmost type, *viz.*, Travancore-Cochin generally at the end of May. The second branch comes slightly later and confines itself to Assam, West Bengal and North-Eastern India.¹

The rainfall conditions in different regions during the South-West monsoon in 1955-56 were as under :—

Regions	Rainfall Conditions
East Uttar Pradesh, Rajasthan, Konkan, Hyderabad, and Rayalaseema	.. Excess
Assam (including Manipur and Tripura), Sub-Himalayan, West Bengal, Gangetic West Bengal, Orissa, Bihar, U. P. West Punjab (including PEPSU, Delhi and Himachal Pradesh), Jammu and Kashmir, Madhya Bharat (including Bhopal) Vindhya Pradesh, Madhya Pradesh, Gujarat, Deccan (Desh), Coastal Andhra Desa, Tamilnad, Malabar, South Kanara, Mysore, Travancore-Cochin.	.. Normal
Ghota Nagpur, Saurashtra and Kutch	.. Deficient

¹ The normal dates of the onset of South-West Monsoons in the different States are as follows :—

Bombay	1st June	Bihar	15th June
Assam	5th ..	U. P. West	20th ..
Madras and Andhra	7th ..	U. P. East	25th ..
West Bengal	10th ..	Punjab and Pepsu	1st July
M. P.		Rajasthan	15th July
		M. B.	

V. S. Menon, *Weather and Crop Conditions in India in Agricultural Situation in En l.o.*, Vol. IX, No. 7 (Oct. 1954), p. 432.

(ii) The Post-Monsoon Season

The post-monsoon season begins with October, and extends up to December. It provides only 13% of the annual rainfall. Normally good post-monsoon showers are received in these three months in the eastern region comprising Assam, West Bengal, Orissa, Madras, Andhra, Konkan and Malabar. In other parts of the country, only light occasional showers are received and the intensity of these showers decreases from east to west. But these light showers are very important for the growing of the late sown *Kharif* crops, especially in southern India, as well as for the sowing of *Rabi* crops. In Madras and Andhra, the rainfall during this period is known as the North-East Monsoon. The rains during this period are of considerable local importance.

The rainfall conditions during this season in different regions of the country in 1955-56 were as under :—

Regions	Rainfall Conditions
Assam including Manipur and Tripura, Gangetic West Bengal, Orissa, Chota Nagpur, U. P., Punjab, including PEPSU, Delhi and Himachal Pradesh, Rajasthan East including Ajmer, Madhya Bharat including Bhopal, Vindhya Pradesh, Madhya Pradesh, Konkan, Deccan Desh, Hyderabad, Malabar and South Kanara, Travancore-Cochin	Excess
Jammu and Kashmir, Gujerat, Saurashtra, Kutch, Coastal Andhra Desh, Tamilnad and Mysore.	Normal
Bihar, Rayalaseema, Sub-Himalayan West Bengal, and West Rajasthan	Below Normal

(iii) Winter-Monsoon Season

Winter monsoon commences in January and lasts up to the end of February. This provides only 2% of the annual rainfall. Yet this is important for the proper growth of *Rabi* crops of wheat, barley, gram and pulses in northern India especially in Punjab, Pepsu, U. P. Bihar, M. P., Rajasthan, M. B. and some parts of Assam.

The rainfall conditions during this season in different regions during 1955-56 were as under :—

Regions	Rainfall conditions
Orissa, Madhya Bharat, Travancore-Cochin . .	Excess
Gangetic West Bengal, Bihar, East U. P., and Vindhya Pradesh . .	Normal

Regions	Rainfall Condition
Assam, Sub-Himalayan West Bengal, Chota Nagpur, West Uttar Pradesh, Punjab including PEPSU, Delhi and Himachal Pradesh, Jammu and Kashmir, Rajasthan, Coastal Andhra (Desa) Tamilnad and Mysore	.. Deficient
Madhya Pradesh, Gujerat, Saurashtra, Kutch, Konkan, ¹ Deccan Dosh, Hyderabad, Rayalseema, Malabar and South Kanara, ¹ Travancore-Cochin	.. Scanty

(iv) *Pre-Monsoon Season*

Pre-monsoon showers during March to May amount roughly to 10% of the annual rainfall. This period of the year is generally dry over the land mass of northern and peninsular India where *rabi* crops are harvested and the irrigated crops like sugarcane, cotton, summer rice and vegetables are grown. But the stronger winds near the sea-coast, which increase in strength as the monsoon advances, bring rains to the north-eastern parts of the country consisting of Assam, West Bengal, Orissa, and Bihar and the north-west coast of Madras and Travancore-Cochin, Malabar and south-east Madras. In the north-east region they help the sowing of autumn paddy and maize, while in the southern area, these rains are beneficial for the sowing *Kharif* crops like paddy, coffee, sugarcane and some vegetables on lands where irrigation facilities are available.

During the beginning of March 1956 rainfall conditions were as follows :—

Regions	Rainfall Conditions
Sub-Himalayan West Bengal, Chota Nagpur, East U. P., Punjab (including PEPSU, Delhi, Himachal Pradesh) Madhya Bharat, West Madhya Pradesh, Gujerat, Konkan, Deccan Dosh, north Hyderabad, Coastal Andhra Desa, Rajasthan, South Kanara and Malabar, Travancore-Cochin	Excess
Assam, Gangetic West Bengal, Orissa, Bihar, West U. P., Jammu and Kashmir, East Madhya Pradesh and South Hyderabad	Normal
Rajasthan, Vindhya Pradesh, Tamilnad and Mysore	Deficient
Saurashtra and Kutch	Scanty

¹ Practically no rain.

Part of the rainfall from the Monsoon in India is orographical, and part cyclonic or convectional. All along the Himalayas, Assam and Western Ghats, the rising air currents result in condensation of moisture and rainfall. The cyclonic rainfall is due to the passage of number of depressions or cyclones, some of which are of local origin, while others have their birth in the neighbouring seas and more landward. Rains in winter in north-west parts of India are of this nature. Convectional rainfall takes place sometimes due to local heating which produces cumulous clouds. This type of rain is strictly local and occurs mostly in autumn or spring.

The annual rainfall of India is 42", i.e. we get all over one lakh maunds of water on every acre of land¹ and variations from this normal—as great as +12 inches and --8 inches—occurred in 1917 and 1899 respectively. Generally the variability decreases with increasing rainfall, the variability being largest in the driest parts of the country and least in the wettest regions.² The high variability in areas of low rainfall is, however, not such a serious menace to agriculture as the comparatively low variability in areas which have just enough rainfall for agricultural purposes. Any decrease in rainfall in such areas makes it impossible for agricultural operations to be carried on and a famine is the result. As average rainfall diminishes from place to place and as it becomes more concentrated in one season, variations from year to year increase. When the normal total is under 20", no agriculture is attempted without irrigation, and rainfall fluctuations are expected and planned for. Where the total exceeds 80", there is almost always a surplus of moisture available for growing of crops. 40" of rain is normally adequate but when it fails, famine is threatened. Thus, the most seriously affected areas are those where the rainfall is between 30" and 50" and this is the famine zone of India. In Rajasthan, Saurashtra, Central India and the Deccan, where some rain usually comes but the variation is great famine descends frequently. In this area there is enough rain for crops during normal years, so that adequate provision of irrigation facilities does not exist. This fact is the source of considerable suffering in times of drought. Long experience with rainfall fluctuations has brought population distribution into close agreement with climate possibilities, but so great is the pressure of people that many have occupied the marginal lands where drought is certain to occur. In certain areas notably E. Punjab and Madras, irrigation has made the settlers somewhat independent of rainfall changes ; but a prolonged failure of monsoon causes rivers

¹ *Census of India, 1951, Vol. I, Pt. IA, p. 10.*

² E.g., Kanpur, whose annual rainfall is 34" has a variability of 20% but Calcutta, with 60", has only 11% variability.

Vide, R. N. Dubey, Economic Geography of Indian Republic, 1951, p. 29.

and wells (the source of irrigation) to have less water than usual and thus to be less adequate for irrigation.

Chief Features of Indian Rainfall

The monsoon rains in India are often marked by some important variations from the normal, *viz.* (i) The beginning of the rains may be delayed considerably over the whole or a large part of the country. (ii) It may end much earlier than usual, causing damage to *Kharif* crops and also make the sowing of *Rabi* crops difficult or uncertain. (iii) There may be prolonged breaks of rain lasting over the greater part of July or August, when the summer crops needing plenty of moisture are just growing. (iv) The rains may persist more than usual in one part of the country and desist from another part. (v) It is concentrated for a few months. It is seasonal, fluctuations in which as regards climate, distribution and timeliness bring misery or prosperity to millions of people. For several months in a year, India is on trial for her life and seldom escapes without a penalty.¹ (vi) It is also unevenly distributed over the country. Certain regions like Western Ghats, Himalayan Tarai and East Assam suffer from excessive rainfall, while others like Rajasthan, west U. P., and Deccan are devoid of adequate rainfall. The sharp transition from heavy rain to dire scarcity is testified by the old proverb, "One horn of cow lies within the rainy zone and one without."² (vii) It is erratic, sometimes falling in torrents and heavy down-pours leading to a considerable run-off. This results in excessive soil leaching and soil-croson.

✓ Rainfall Zones

India may be divided into following rainfall belts : (i) Below 15" belt ; (ii) From 15" to 30" belt ; (iii) 30" to 50" belt ; (iv) 50" to 70" belt ; and (v) over 75" belt. The first two belts taken together cover about 1/3 of the country. Here the seasonal fluctuations are so frequent, that they are more or less regularly expected ; and when they occur, they cause a great deal of hardship to the people and expense to the Government. The first belt has so little rain that a great many people do not live there ; but in the second belt about 1/4 of the people live. The third region covers almost exactly another one-third of the country. Here rainfall, if timely, is adequate, but the vagaries of the monsoon are apt to cause occasional failure of crops and consequent distress. The fourth and the fifth regions also cover about a third for the country. These are well provided with rain, which is generally, though not invariably, also dependable.

1 C. A. Knowles, *Economic Development of British Empire Overseas*, Vol. II, p. 278.

2 Ronaldshay, *India—A Bird's Eye View*, p. 152.

Effects of Climate on Agricultural Economy

Perhaps in no other regions of the world the rainfall enters so much into every aspect of life as in India. Life here is primarily based on agriculture, which is dependent for its very existence on the South-West monsoons. *This monsoon may be said to be the pivot upon which the whole of Indian life swings.* The deficiency of rainfall spells disaster for the cultivator and the prolongation of the dry season renders all hopes of a rich harvest that year futile. Hence, in one season India is deluged with rain and is the scene of most wonderful and rapid growth of vegetation; in another period the same tract becomes dreary, sun-burnt and waste. In fact, "if monsoon fails, there is a lock-out in agriculture industry,¹ a disaster which calls forth the virtues of patience, fortitude and charitableness."

As winter temperatures are never too low in any part of the country, the growing period for the crops is prolonged and this fact enables us to grow both the temperate land crops in winter and tropical as well as sub-tropical land crops in summer months. In parts of West Bengal, Assam and the Peninsular coastal region, owing to availability of sufficient water supply, growing of crops is easy. As many as three crops of rice can be grown in one year in these parts. The summer temperatures are high and rise suddenly, hence crops mature earlier. This rapid maturity of crops tends to deteriorate their quality. India, is, therefore, not a 'quality' producer, but only a 'quantity' producer. This applies to winter crops as well as summer crops.

Climate also exerts a great influence on agriculture, the basic industry of India. Water is more valuable than gold in India and hence with the failure of rains, crops fail and famine conditions quickly overtake the region. The agriculturists are not the only persons who are affected by the failure of monsoons. As the incomes of the agriculturists fall, their capacity to buy industrial goods and services is diminished. Lawyers, doctors and professional men find their incomes reduced. Sales of industrial products diminish, and there arises a shortage not only of agricultural raw materials but also of food crops. Failure of crops reduces railway earnings and affects the volume of exports. Rent cannot be collected and land revenue falls into arrears. Thus the Finance Departments find their budget calculations upset. It has, therefore, been rightly remarked that "Budget making in India is a gambling in rains."

The uniformly high temperatures during the period of the greatest rainfall (June, July and August) are of great benefit for the quick growth and maturity of crops like millets and maize.

¹ Vera Anstey, *Economic Development of India* (1926), p. 15-16.

The hot and moist climate of this period produces an abundant vegetative growth in plants which serve as a fodder for cattle. As the rainfall is concentrated to only few months, the greater part of the year is dry. This fact discourages the growth of grass-lands in India. Whatever grass grows during the rains is scorched during the dry season. Hence, pasturage is poor in India and cattle and other live-stock have, therefore, to be stock-fed. The extreme uncertainty of rainfall in various parts of the country and its compression into one or two months, have necessitated the practice of irrigation more universally and on a larger scale in India than in any other part of the world. A special peculiarity of Indian agriculture is the ingenious and assiduous manner in which water is applied to increase the produce of the soil, by means of tanks, embankments, sluices, river-dams and channels, wells and irrigation canals.

Effects of Rainfall on the Crop Production

1. *Kharif crops.* The kharif crops in 1955-56 generally fared well in the different parts of the country under favourable weather conditions both at the sowing and growing times except in parts of Assam, Bihar, West Bengal, East U. P., Punjab, PEPSU and in Southern States like Hyderabad, Mysore and Travancore-Cochin. The production of kharif crops except rice and sugarcane crops declined as compared to 1954-55 and 1953-54 but were better than those of 1949-50 which is considered to be a normal year for agriculture after partition as will be seen from the following table :—

Kharif crops	Area (Million acres)			Production (Million tons)		
	1949-50	1954-55	1955-56	1949-50	1954-55	1955-56
Cereals	163.5	176.2	173.6	37.5	41.1	42.3
Pulses	..	16.7	15.9	..	1.9	1.7
Sugarcane	3.6	4.0	4.4	4.9*	5.8*	5.9*
Oilseeds	16.3	21.4	19.8	3.9	4.8	4.4
Cotton	12.2	18.7	20.2	2.6*	4.2†	4.0†
Jute	1.2	1.2	1.6	3.1‡	2.9‡	4.1‡

2. *Rabi crops.* Production of Rabi crops during 1955-56 season declined as compared to 1954-55. The table below gives production of rabi crops for 1955-56 as compared to 1954-55 and 1949-50 :—

Rabi crops	Area (Million acres)			Production (Million tons)		
	1949-50	1954-55	1955-56	1949-50	1954-55	1955-56
Cereals	..	32.0	35.8	8.5	11.6	11.1
Pulses	38.6	..	9.1	8.5
Oilseeds	..	8.5	9.4	1.2	1.4	1.2

*In terms of raw-sugar or Gur.

†In bales of 392 lbs. of cotton lint each.

‡In bales of 400 lbs. each.

The area under Rabi crops increased during 1955-56 as compared to 1954-55 whereas production declined due to unfavourable weather during the growing period. But production of rabi crops during 1955-56 was higher than that of 1949-50, the year which was normal for agriculture after partition. Even though conditions were favourable for the sowing of Rabi crops they were unfavourable during the growing period; hail-storm and strong winds caused heavy damage to Rabi crops, *viz.*, wheat, barley and gram, particularly in the important growing states of U. P. and Punjab. Crop diseases and pest attacks were, however, reported from parts of Bombay, Madras, Punjab, U. P., and Madhya Pradesh. Wheat rust was reported from parts of Madhya Pradesh, Bombay and Saurashtra. Damage to crops on these accounts was, however, negligible due mainly to timely and adequate measures taken by the state authorities.

3. Flora and Fauna

The geographical position of the country and its climatic and geological conditions have an important bearing on the vegetable and animal life of India. The large extent of its area and a great variety in physical feature and climate, combined with the natural fertility of the soil, enable the country to produce almost every kind of vegetable life. In fact the flora and fauna of India is more varied than that of any other area of the same extent in Asia, if not in the world. Hence, except the grasslands and the savannahs all types of natural vegetation are found in exuberance. Hence, we find not only the tropical and sub-tropical products, but also the products of the temperate zone as well. The most important among the tropical products obtained here are rice, coffee, millets, sugarcane, cinchona, jute, spices, India-rubber, pineapple, bananas, and other kinds of tropical fruits. The chief sub-tropical crops are cotton, tobacco, opium and tea. Of the products of the temperate zone, the most important are wheat, maize, barley, pulses, potatoes, hemp and flax and various kinds of fruits. Besides these, many miscellaneous commodities are found, such as a large variety of oilseeds, gums, timber and indigo.

India possesses a fairly adequate supply of good, serviceable cattle. India holds the world's largest cattle population in the world, but she is not the most densely cattle populated country of the world nor has she a high ratio of cattle to human population unlike countries known for stock raising. Besides cattle India also possesses a large number of other animals too, *viz.*, sheep, horses, mules, camels and goats.

India is a land unique in many respects. Within her own borders she presents every variety of natural features to be found on the surface of the earth. Snow-capped mountains, precipitous

ravines, undulating hills, high plateaus, level plains, sandy deserts, verdant oases, mighty streams and rich fields diversify the surface of the country. So that Hindustan presents beautiful plains, smiling fields adorned with luxuriant vegetation and harvest that are gathered twice yearly. "India has been favoured bountifully from the permanent snows of the Himalayas and the glorious alpine regions of Kashmir to the rainless desert of the western Rajasthan and the continental extremes of the west Rajasthan and the perpetual hot-houses of the Malabar. India possesses a great diversity of animals, vegetation products and minerals ranging from the heavily coated Kashmir sheep to the camel of the western Rajasthan and elephant and tiger of Bengal, from wheat, fruits and fir trees of the north and the U. P. to the rice and jute fields of West Bengal and the slender and elegant areca palm and the dhupa trees of Mysore, cocoanut palms of the low-lying swamps and coastal regions, and from the coal and iron fields of Bengal, Bihar and Orissa to the gold regions of Mysore and salt lakes of Rajasthan and the oilfields of Assam."¹ Diversity of physical features and the climatic conditions have produced great varieties in population and the economic habits of the people. What different types are represented in the case-loving agriculturists of Bengal, the hard-working Deccanees of the peninsula, the shepherd hill men of the Himalayas and the primitive huntsmen of the hill regions !

1 Vera Anstey, *op. cit.*, pp. 5-6.

CHAPTER 2

PROBLEMS OF INDIAN AGRICULTURE

India has been an agricultural country since hoary past. The classification of population according to means of livelihood at the 1951 census shows that 70 per cent of the people depend on agriculture and 30 per cent live by non-agricultural professions. The preponderance of agricultural over non-agricultural population prevails in all the States except Saurashtra, Kutch, Ajmer, Delhi, and Andaman and Nicobar Islands, where the non-agricultural population exceeds the agricultural population by 3, 8, 5, 10 and 86 respectively. In the two industrially advanced States of West Bengal and Bombay, the proportion of agricultural population, though far in excess of non-agricultural is much below the all-India average. In the hilly states of Himachal Pradesh and Sikkim, the agricultural population is nearly 95 per cent of the total.

The following table gives the distribution of population according to agricultural and non-agricultural pursuits in India¹ :—

States	Total population (millions)	Agricultural population (millions)	Percentage of the total	Non-agricultural population % of the total
U. P.	63·2	46·8	74·1	25·9
Bihar	40·2	36·6	86·1	13·9
Orissa	14·6	11·6	79·5	20·5
W. Bengal	24·8	14·2	57·3	42·7
Assam	9·0	6·6	73·3	26·7
Manipur	·6	·5	83·3	16·7
Tripura	·6	·5	83·3	16·7
Sikkim	·1	·1	100·0	...
Madras	57·0	37·0	65·0	35·0
Mysore	9·1	6·3	69·2	30·8
Travancore-Cochin	9·3	5·1	54·8	45·2
Goorg	·2	·1	50·0	50·0
Bombay	35·9	22·1	61·3	38·7
Saurashtra	4·4	1·9	46·3	53·7
Kutch	·6	·2	33·3	66·7
Madhya Pradesh	21·2	16·1	75·9	24·1

¹ Calculated from the figures given in the *Census of India* Paper No. 1 of 1951, Final Population Total, p. 11-12.

States	Total population (millions)	Agricultural population (millions)	Percentage of the total	Non-agricultural population % of the total
Madhya Bharat	7.9	5.7	72.1	27.9
Hyderabad	18.7	12.7	67.8	32.2
Bhopal	.8	.5	62.5	37.5
V. P.	3.6	3.1	86.1	13.9
Rajasthan	15.3	10.5	70.6	29.4
Punjab	12.5	8.1	64.8	35.2
Pepsu	3.5	2.3	71.4	28.6
Delhi	1.7	.1		
Ajmer	.7	.3		
Nicobar Islands	0.3	.004		
Himachal Pradesh	1.0	.9		
India (exclude J & K)	356.6	249.1	70.0	30.0

Out of every 100 Indians, including their dependents, 47 are mainly peasant proprietors, 9 mainly tenants, 13 landless labourers, one is landlord or rentier, while 10 are engaged in industries or other non-agricultural production, 6 in commerce, 2 in transport, and 12 in the services and miscellaneous professions. The following table gives the livelihood pattern of Indian population.¹

Livelihood Pattern of Indian Population

Livelihood class	Self-supporting persons	(Number in millions)				Total (col. 6) as percentage of the Total General Population
		Non-earning	Earning	Total (cols. 3 and 4)	Total (cols. 2 and 5)	
1	2	3	4	5	6	7
1. Owner cultivators	45.7	100.1	21.5	121.5	167.3	46.9
2. Tenant „	8.8	18.9	3.9	22.8	31.6	8.8
3. Cultivating labourers	14.9	24.7	5.2	29.9	44.8	12.6
4. Non-cultivating owners of land, and other agricultural rent receivers	1.6	3.3	0.4	3.7	5.3	1.5
Total—agricultural classes	71.0	147.0	31.0	178.0	249.9	69.8

¹ *Census of India*, Vol. I, Part I. A. p. 108.

Livelihood class	(Number in millions)					Total (col. 6) as percentage of the Total General Population
	Self-supporting persons	Non-earning	Earning	Total (cols. 3 and 4)	Total (cols. 2 and 5)	
1	2	3	4	5	6	7
5. Primary industries, mining and quarrying, and processing and manufacture	12.2	22.3	3.2	25.5	37.7	10.5
6. Commerce	5.9	14.5	0.9	15.4	21.3	6.0
7. Transport	1.7	3.7	0.2	3.9	5.6	1.6
8. All others	13.6	26.8	2.6	29.4	43.0	12.1
Total--non-agricultural classes	23.4	67.3	6.9	74.2	107.6	30.2
General Population	104.4	214.3	37.9	252.2	356.6	100.0

Livelihood Pattern of Agricultural Classes in Different States

State	Total agricultural population ('000)	Percentage of cultivators of land wholly or mainly owned and their dependents. (Livelihood Class I)	Percentage of cultivators of land wholly or mainly unowned and their dependents. (Livelihood Class II)	Percentage cultivating their dependents. (Livelihood Class III)	Percentage non-cultivating owners of land dependents. (Livelihood Class IV)
<i>Part 'A' States :</i>					
Assam	6633	78.9	17.5	2.4	1.2
Bihar	34611	64.3	9.6	25.4	0.7
Bombay	22098	66.3	15.8	14.7	3.2
Madhya Pradesh	16149	65.1	5.9	26.8	2.2
Madras	37021	53.8	14.8	28.1	3.3
Orissa	11612	75.1	7.5	15.5	1.9
Punjab	8069	59.8	24.9	11.9	3.4
Uttar Pradesh	46897	83.9	7.9	7.7	1.4
West Bengal	14195	56.5	21.0	21.4	1.1
<i>Part 'B' States :</i>					
Hyderabad	5940	60.5	10.8	25.2	3.5
Madhya Bharat	2210	69.8	14.1	14.8	1.3
Mysore	2732	79.4	6.8	9.7	4.1
Pepsu	959	66.6	16.0	14.2	3.2
Rajasthan	4455	61.1	32.3	4.4	2.2
Saurashtra	2208	70.3	17.9	8.1	3.7
Travancore-Cochin	4190	48.0	12.9	36.8	2.3

State	Total agricultural population ('000)	Percentage of cultivator of land wholly or mainly owned and their dependents. (Livelihood Class I)	Percentage cultivators of land wholly or mainly owned and their dependents. (Livelihood Class II)	Percentage cultivating labourers and their dependents (Livelihood Class III)	Percentage non-cultivating owners of land dependents. (Livelihood Class IV)
<i>Part 'C' States :</i>					
Ajmer	379	82.5	6.9	6.2	4.4
Bhopal	288	56.8	10.9	30.5	1.8
Bilaspur	12	84.9	12.2	1.7	1.2
Coorg	97	58.0	17.4	18.5	5.5
Delhi	1572	72.2	9.6	17.0	3.2
Himachal Pradesh	59	90.7	7.2	1.0	1.1
Vindhya Pradesh	460	71.5	7.3	20.2	0.6
India	249122	68.17	12.7	17.99	2.14

Importance of Agriculture in National Economy

Agriculture has always occupied a place of pride in India's economy. The great significance of agriculture in the country's life and economy is well borne out by the fact that it is the mainstay of the people. Truly speaking agriculture is not merely an occupation or a business proposition for the people, it is a tradition, a way of life which for centuries has shaped their thoughts, outlook and culture.

Firstly, agriculture is the premier source of national income. This is evident from the fact that it contributed no less than Rs. 4,450 crores or 48.9 per cent of the total income. Commerce, transport and communications and mining, manufacturing and hand trades contributed 4,660 crores or 51.1 per cent of the total. Other services including professions and liberal arts, etc., contributed Rs. 1,610 crores of the total income.¹

Secondly, agriculture provides the bulk of our exports. Commodities like jute, oilseeds, lac, tea and tobacco figure as the most important items in the foreign trade of India. They directly help us in earning foreign exchange resources.

Thirdly, agriculture provides food for 356 million people of India and fodder for 155 million cattle. In 1950-51, the total area under crops amounted to 32.03 crore acres, and the gross value of all agricultural commodities produced in the country was Rs. 4,866 crores. The net value of agricultural output was, however, only Rs. 4,112 crores.²

¹ India, 1956, p. 104.

² *Ibid.*, p. 92.

Fourthly, agriculture forms the basis of our various industries including trade and transport. Some of our industries like sugars, textiles, etc., depend on agriculture for raw materials. Railways, and other transport agencies get the bulk of their business from the movement of agricultural produce from the farms to the cities.

Place of Indian Agriculture in the World

India is the largest cane-sugar-producing country in the world. What is true of sugar is also true of other important commodities. "India shares with China the primacy for the production of rice. In cotton she ranks next to U. S. A. It leads in the production of groundnuts and ranks second only to Argentina in linseed. In lac it possesses almost a monopoly. In millets India ranks with China and Africa as one of the three main producing countries. Of tea it is one of the largest exporters to U.K. ranking next to China as the world's biggest tea producer. India holds the world's monopoly for its cattle population, the U. S. A. coming second at a great distance." Thus it is that India feeds and to some extent clothes its population from 2/3 of an acre per head of produce. There is probably no other country in the world where the land is required to do so much.¹

Present Position of Indian Agriculture

Specially in a country like India where every three out of four persons depend on agriculture, the overwhelming importance of agriculture in national economy of the country cannot be over-emphasized. But it is a pity that in spite of its preponderating importance to our national economy agriculture is a depressed industry. "In India we have our depressed classes, we have too our depressed industries, and agriculture, unfortunately, is one of them."² This is proved by the fact that the yield per acre of crops is comparatively low, which is barely one-third or one-fourth of the yield of other countries and this too is reduced to nothing in periods of drought.

The average yield per acre in India is one-third of that in Egypt and one-fifth of that in Holland and Denmark in respect of wheat; nearly one-fourth of that in Italy in respect of rice; one-third of that in Switzerland and Newzealand in respect of maize; less than one-third of that in Cuba, one-fourth of Java; and one-seventh of Hawaii in respect of sugarcane and less than one-fifth of that in Egypt in respect of cotton."³

1 T. Holderness, *Peoples and Problems of India*, p. 139.

2 View of Dr. Clouston, one time Agricultural Adviser to the Government of India.

3 Nanavati & Anjaria, *Indian Rural Problem*, 1951, p. 43.

The economic loss on account of this low yield in respect of wheat alone is explained well by Sir Macdougall, as follows: "If the output per acre in terms of wheat were raised to that of France the wealth of the country would be raised by £5,659,000,000 a year. If the output were in terms of English production, it would be raised by £1,000,000,000. In the terms of Danish wheat production the increased wealth to India would be £1,500,000,000 per year."¹ Thus it will be acknowledged on all hands that Indian agriculture judged by the "test of quantitative production has remained backward and unprogressive, that it fails to obtain the yield of which the country is capable, and that there is a vast field for improvement in the efficiency of methods. Agriculture in India is only 86 per cent as efficient as the average production in the important countries of the world, but compared with most of the European countries it would be scarcely more than 50 per cent as efficient."²

Consequences of Low Yields

The low yields of crops lies at the root of the crushing poverty of our rural masses. It had been the basic cause of the severity of food problem from 1942 till 1953. Millions of our countrymen still suffer all their lives from mal- and under-nutrition leading to low vitality and starvation deaths.

Secondly, the low level of production of cash crops means, in general, low level of purchasing power of the peasant masses. This in turn produces several serious consequences: (i) The home market for industrial goods shrinks, with industrial decay as the result thereof. (ii) Industrial decay produces unemployment for the workers and the middle class people with all the evil consequences. (iii) The burden of rent, interest and taxes grows to such an extent that rural economy cracks up, domination of the money-lender grows over the peasantry, the peasants are forced to sell their land and land gets concentrated in the hands of the parasitic class. This in turn reduces the productivity of the soil.

The most signal defect of the low yield of crops is the consequent low productivity per worker. Prof. Collin Clark has estimated the quantity of primary production per worker engaged in primary industry as follows.³ :—

N. Zealand	2,244	International units	U. S. A.	661	I. U.
Australia	1,524	"	Denmark	642	"
Argentina	1,233	"	Japan	120	"
Uruguay	1,000	"	Russia	88	"
			China	47	"

1 Central Banking Enquiry Committee's Report, p. 701.

2 Rajnikant Das, *Industrial Efficiency of India*, 1930, p. 29.

3 C. Clark, *Conditions of Economic Progress*, 1935.

No separate estimate has been made for India, but it is believed that it cannot be much different from the figures of China. In some countries of the world only a fifth of the population produces a diet that gives a person some 8,000 calories a day, i.e., a family adequately feeds five families; while in India one farm family cannot support properly itself and half of another family. It has been estimated that the labour of one male agriculturist in New Zealand is sufficient to supply an optimum diet to 40 people, in Australia to 25 people, in Argentina to 20, in U. S. A., to 11; in Great Britain or Germany to 8 and in Japan or Russia to 2 people.¹

Besides it is distressing to note that per capita income of persons engaged in agriculture is only Rs. 500, as against Rs. 1,700 in mining and factory establishment, Rs. 1,600 in railways and Rs. 1,500 in Banking, Insurance and Commerce and Transport, and Rs. 1,100 in Government services.

Causes of Low Yields

Adverse natural conditions and climatic fluctuations are in some regions directly responsible for low unit yields. The population density may not have any relation with the yield in such cases. But natural factors do not entirely explain the fact that even the maximum in low unit regions remains below the optimum yield obtained in other regions of similar climatic conditions. The density of population depending upon agriculture in such cases has a direct bearing on the unit yield of the region. The unit yields of cereals are lower in the more purely agricultural countries than in more industrialised countries.² Excessive population results in disproportionate utilization of land for cereals, unsatisfactory system of crop rotation and less possibility of recuperation of soil. The part of decline in the yield with increase in acreage may be due to the tendency of relegating the production of foodgrains to inferior soils and reserving the better kinds of soil for the cultivation of commercial crops. Dr. B. R. Sen—Economic and Statistical Adviser to the Ministry of Food and Agriculture—quotes the results of study made by Mr. Panse of the I. C. A. R., and arrives at the conclusion that “by and large the yield per acre has tended to remain stationary during the last few decades. While in the case of cash crops, there is clear evidence of general increase in yield rates, in the case of food crops, the yields do not show any definite trend either way. The only valid conclusion is that while the fertility of the soil or standard of husbandry has not perhaps gone down, it has not

1 Mamoria and Saxena, *Co-operation in India*, 1957, p. 7.

2 V. Klonov. Quoted in *European Conference on Rural Life* (1933), Document No. 1 (L. of Nation), p. 53.

also gone up either. All the attempts at agricultural improvement during the last few decades have been able merely to postpone the Diminishing Returns which inevitably follow increasing pressure of population on land.¹ Secondly, the decline may be due to the fact that with the increase in demand for agricultural produce cultivation has been extended so as to bring under cultivation the poorest lands. This would naturally diminish the average yield per acre. Density of population also leads to a diminution in the number of periodical fallows and consequent increase in weeds and in the area in relation to available supplies of manure, resulting in soil deterioration.² In agricultural economy the case of fertilisers and of machinery always remains high and the standard of skill is low. There is no organised accumulation of capital necessary for the introduction of technical improvements. The agricultural population falls in a vicious circle; pressure of population on land results in low unit yields, which in their turn mean more demand for food and, therefore, more pressure on land. The Draft Report admitted that the area was not reflected in a corresponding increase in production,³ while the Planning Commission hesitate to arrive at any conclusion regarding yield trends on the basis of the available data. The following table shows the average yield per acre of principal crops in India⁴ :—

Crop	1918-19	1923-24	1936-39	1940-41	1947-48	1950-51	1951-52	1953-54
	Yield in lbs., per acre							
Rice (cleaned)	701	798	809	680	739	596	632	791
Wheat	707	644	623	643	599	592	582	669
Cotton	76	87	—	101	80	78	76	91
(ginned)								
Jute	1195	1169	—	1015	1017	931	959	1046
Groundnut	997	854	878	946	758	691	579	744
(Nuts in shell)								
Sugarcane	1897	2514	—	2829	3213	2983	2805	2873
(gur)								
Linseed	265		257	268	213	235	210	—

1 B. R. Sen, 'Population and Food Supply in India' in *Studies in Agricultural Economics* Vol. I, (1954), p. 3.

2 *Agricultural Commission Report* (1928) p. 77. Also the *First Five Year Plan* p. 156, somewhat same opinion was expressed by Sri K. L. Datta, who after considering all available figures came to conclusion that 'there is no statistical evidence to show that any change has taken place in the fertility of agricultural lands in any part of India, either during the period under enquiry (1890-1912) or even during a much longer period (K. L. Datta, *Report on the Enquiry into the Rise of Prices in India* (1914), p. 17.

3 *The Draft Report*, p. 12.

4 *Estimates of Area and Yield of the Principal Crops in India* (1938-39) p. 8-11 for figures up to 1940-41; for later figures, see *Agricultural Situation in India* (Nov. 1934), p. 77.

We may not draw a definite conclusion from the above figures supplied by the Government of India, but the figures require consideration.

For 1955-56 the average and standard yield of principal crops given below¹ :—

Crop	Average	Standard	Crop	Average	Standard
Rice	748	902	Sugarcane	2,952	3,516
Jowar	365	530	Tobacco	629	977
Bajra	282	417	Sesamum	179	291
Maize	634	946	Groundnut	677	—
Ragi	735	937	Rape & Mustard	298	502
Small Millets	361	—	Linseed	246	303
Wheat	641	828	Cotton seed	193	111
Barley	748	877	Cotton-lint	78	—
Gram	475	722	Jute	1,048	1,296

The wide fluctuations in yield per acre of different kinds of crops in some States are illustrated by the following table² :—

Crop	All-India Average	Madras	Bombay	M. P.	Bihar	U. P.	W. Bengal	Punjab
Wheat	628	—	382	399	827	757	565	804
Rice	748	1023	887	596	671	592	830	565
Maize	724	778	631	996	636	800	721	780
Jowar	438	541	341	498	562	481	707	190
Gram	555	431	331	385	717	628	594	430

It appears that whereas the rice yield per acre in Madras is 1,023 lbs., it is 565 in Punjab and 592 in U. P. In the case of wheat the yield per acre in M. P. is less than half that of Bihar, although the area under wheat in M. P. is twice that in Bihar. This wide range of variation in yields, even taking into account the differences in soil, climate, rainfall, in different provinces, cannot be easily explained. One feels tempted to observe that no conclusions of any value can be based upon such unsatisfactory returns as those to be found in official statistics, based upon an average estimate of the yield of land of different qualities arrived at on hypothetical grounds by the Agriculture Department.³

Turning to a comparison between the yield per acre of different kinds of crops in India and the yield per acre of the same crops in other countries, it may be observed that our agricultural productivity can best be compared with that of the countries like China and Japan, where the methods of cultivation have been handed down as in India from generation to generation for centuries. It is also useful to compare our productivity with that of countries like U. S. A., Australia, U. S. S. R. which enjoy the advantages of large-scale scientific agriculture and which contri-

¹ *Commercial Annual*, 1956 and *Eastern Economist Annual*, 1956.

² *Proceedings of Eighth Meeting of Crops and Soil Wing of the Board of Agriculture in India* (1952), p. 83.

³ *H. M. S. O. Overseas Economic Survey—India* (1951), p. 157.

bute a substantial share to the world's agricultural production. The following table gives us a comparative view of the agricultural productivity in different countries :—

Average Yield per acre of Major Food and other Crops

(In lbs. per acre)

	1934-38	1948-50	1952	1955
<i>Wheat</i>				
India	572	607	572	640
U. K.	2,033	2,358	2,508	
U. S. A.	776	977	1,082	1,160
France	1,373	1,628	1,751	1,818
Germany, Western	1,936	2,173	2,428	...
Canada	625	915	1,566	1,438
Australia	704	959	1,135	967
China	950	897	868	...
Japan	1,654	1,496	1,874	...
Pakistan	748	800	660	...
<i>Rice (Paddy)</i>				
India	1,196	977	1,038	1,141
U. S. A.	2,173	2,217	2,411	...
Brazil	1,258	1,408	1,355	1,417
Burma	1,240	1,267	1,196	1,445
Japan	3,194	3,555	3,634	4,294
Thailand	1,135	1,179	1,135	1,275
Pakistan	1,302	1,250	1,152	1,135
Philippines	959	1,038	1,126	...
<i>Maize</i>				
India	651	528	651	634
U. S. A.	1,232	2,164	2,235	2,231
Italy	1,812	1,504	1,654	2,322
Yugoslavia	1,548	1,240	563	1,414
Brazil	1,223	1,117	1,064	...
China	1,214	1,214	1,170	...
Argentina	1,592	1,302	1,328	1,114
<i>Cotton (Lint)</i>				
India	79	70	79	...
U. S. A.	211	282	273	...
Brazil	158	138	158	...
China	202	132	141	...
Pakistan	167	167	167	...
Egypt	475	484	475	...

	(In lbs per acre)			
	1934-38.	1948-50.	1952	1955
<i>Jute (Raw)</i>				
India	871	977	1,012	...
China	1,003	1,012	915	...
U. S. A.	854	1,232	1,258	...
Brazil	792	695	607	...
Italy	1,100	1,162	1,214	...
Canada	1,047	1,197	1,496	...
<i>Groundnuts</i>				
India	862	713	537	...
U. S. A.	739	783	924	...
China	1584	—	...	—
French West Africa	484	598	598	—

The remarkably low productivity of land in India in comparison to other countries is largely due to the differences in climatic and ecological factors and agricultural methods (which affect agricultural production) and in the stages of development in the economic life of these countries and partly to the differences in the methods of computation. Even allowing for these limitations, the yield of crops in India must be admitted as exceedingly low. The more disconcerting trend is the gradual fall in the yields of the principal foodgrains. The yield per acre of rice has fallen from 866 lbs. in 1929 to 748 in 1955-56; of wheat from 741 lbs. to 641 lbs. during the same period, of jowar it declined from 437 lbs. to 282 lbs. between 1936-39 and 1955-56, of maize from 683 to 548 lbs., of bajra from 351 to 221 lbs. of ragi from 696 to 494 lbs; of small millets from 414 to 362 lbs.; of gram from 518 to 475 lbs. and of barley from 755 to 748 lbs. during the same period.¹

We might, therefore, conclude, that the land in India has certainly been put to more intensive use than abroad because of the heavy pressure of people on land, as can be judged by the fact that the average yield of wheat per acre in U. K. is four and half times that of India; that the outturn of sugar per acre in India is about one-thirteenth of that in Hawaii and one-eleventh of U. S. A.; one-sixth of Australia and one-third that of Cuba; and

¹ V. G. Panse, as a result of the study of *Trends in Areas and Yields of Principal Crops in India* from 1910-11 to 1945-46, however, reached a hopeful conclusion that for cash-crops the data reveal clear evidence of generally increasing yield rates. In respect of food crops also an expansion in area is perceptible in several cases as also an increase in the proportion of irrigated area. In foodgrains the decrease in yield is generally associated with an increase in area under the crop and the increase in yield is generally associated with a general rise in the proportion of area under irrigation. (*Studies in Agricultural Economics*, Vol. I, 1954, p. 67).

the yield per acre of cotton in our country is one-sixth of that in Egypt, one-third of that in U. S. A. and one-fourth of Mexico. The same is true of other commodities too. The deduction is obvious that agriculture in India has become a deficit economy, "*and to a very great extent the Indian cultivator labours not for profit nor for a net return but for subsistence.* The overcrowding of people on land, the lack of alternative means of securing a living, the difficulty of finding any avenue of escape and the early stage at which man is burdened with the dependents; combine to force the cultivator to grow food wherever he can and on whatever terms he can."¹

The causes of this situation, *i.e.*, low yield of crops per acre may be summarised thus : (i) The subsistence type of farming and the consequent deficit in agricultural economy ; (2) poor equipment, inadequacy or obsolete nature of tools and inferior livestock, (3) defective preparatory tillage, (4) sub-division and fragmentation of holdings, (5) the lack of adequate credit facilities and the resultant indebtedness of the peasant and his poverty, (6) large areas of land under cultivated wastes, insufficiency, irregularly and uncertain water supply, (7) soil exhaustion due to continued cropping for hundreds and thousands of years without proper manuring either natural or artificial, (8) the menace of soil erosion, which causes havoc to the land, and the faulty methods of cultivation, (9) lack of adequate supply of improved seeds, (10) disease of plants and the large incidence of insects-pests, and above all (11) the faulty land system have also been responsible for low yield of crops. These factors have been discussed in detail in the chapters that follow.

Over and above all these factors peasant farming in India depends for its successful working not only on great perseverance but also unwearied exercise of prudence, forethought and watchfulness, and the utilisation of the scientific knowledge of the means of production. The value of the human factor is not be overlooked in taking stock of the agricultural situation for "Communities and nations have remained poor in the midst of rich surroundings, or fallen on decay or poverty in spite of the fertility of their soil and the abundance of their natural resources merely because the human factor was of poor quality or was allowed to deteriorate or run to waste."² Now so far as this human element is concerned, we have already seen that the seasonal variations render agriculture a precarious occupation and the undue dependence of the cultivation on nature has engendered in him a spirit of depression, fatalism, and hopelessness unless he is assisted by the external agencies. Within the existing conditions and limitations, the

¹ *Report of the Royal Commission on Agriculture*, p. 433.

² T. N. Carver, *Rural Economics*.

resourcefulness of the Indian cultivators have been testified by foreign experts. Dr. A. J. Voelcker has rightly remarked in this connection, "To take the ordinary acts of husbandry, nowhere would one find better instances of keeping land scrupulously clean from weeds, of ingenuity in device of water-raising appliances, of knowledge of soils and their capabilities, as well as the exact time to sow and to reap, as one would in Indian agriculture, and this not at its best alone but at its ordinary level.....Certain it is that I, at least, have never seen a more perfect picture of careful cultivation, combined with hard labour, perseverance and fertility of resources, than I have seen many of the haunting places in my tour.

"Crippled by a relentless climate, for generations scourged by famine, pestilence, and the war, his wealth at the mercy of every despot's whim, his cattle a prey to disease and drought, his crops periodically devastated by blight and flood, serving, too, not the gentle goddess that Nature is in West but a volcanic force of terrific power and wild caprice, how the Indian cultivator be anything but a fatalist. In such conditions progress is impossible, knowledge, skill, energy and capital must appear of little avail when man is infinitely weak and nature overwhelmingly strong."¹ Agriculture in India, as will be evident from the causes mentioned above, offers great scope for development not only in the direction of extending the limits of cultivation to the culturable but hitherto uncultivated lands, but equally great opportunity in raising the pitch of cultivation itself.

If the financial status of our cultivators is to be improved and if our agriculture is to be placed on the sound footing with a view (1) to make our country self-sufficient in matters of food requirements, (2) to supply our industries with necessary raw materials and (3) to provide with surplus agricultural crops to encourage our export trade after satisfying some demand it is extremely necessary that agricultural practices and policies should be reorganised from a different view-point than what is being done at present.

Reorganisation of Agricultural Conditions

In the nature of things—especially in view of the vast proportion of India's rural population agriculture will probably remain, in any foreseeable future, the mainstay of India's economy as majority of the people will still continue to be dependent on it. Somewhat similar view was expressed by Sir M. Visvesvaraya. According to him we can only expect the population supported by industries—big and small—to increase from 35 to 85 millions. Even if this is realised, it is maintained that only one-fifth of the people may be absorbed in industries, leaving about four-fifths to eke

¹ Dr. J. A. Voelcker, *Report on Improvement of Indian Agriculture*, p. 10.

out their living on land. In any plan of economic development therefore, the first and foremost emphasis must be placed on the improvement and extension of agriculture. Economic growth imperatively calls for a balanced expansion of the diverse sectors of the economy, and if the expansion potential in some critical sector is at a low ebb or absent the expansion potential of the other sectors cannot become effective.¹ The growth of critical sectors of the economy may lag behind not only on account of some basic natural scarcity which imposes an inexorable physical barrier, but also on account of the fact that the social forces leading to expansion extend not to all sectors of the economy but to some of them. At this point one instinctively thinks of the critical division between industry and agriculture. The growth of industrial production, of necessity, presumes the growth of agricultural production. It also postulates that the proportion of agricultural output which is not consumed inside the agricultural sector but is supplied to the industrial sector should become steadily larger.² Remarks Dr. B. Datta, "Industrialisation is possible only when agriculture has reached a high level of prosperity so as to provide self-sufficiency in food, to create a surplus for capital formation and to increase the demand for secondary products."³

The development of industrial production needs an increase in total agricultural production because with higher real income food consumption increases as well, though probably less than proportionately; but more important than this, it needs an increase in the proportion of output which the agricultural sector is willing to supply to the towns, i.e., marketable agricultural surplus. In Great Britain, the so-called, "Agricultural Revolution" preceded the "Industrial Revolution." It was the resulting growth in food production and in the productivity of the labour engaged on land which provided both the food and the man power for industrial expansion.⁴ At a later stage, however, further progress of industrialisation was made possible by the food imported from the "new countries" overseas. Therefore, for promoting manufacturing industry on a gigantic scale a country has got to possess a highly efficient and considerably "commercialised" agriculture with both high yields per acre and high productivity per man. It was the recognition of this basic character of the problem which gave rise to the forced conversion at enormous sacrifices of individual peasant farming into "collectivised" farming in Soviet Russia in 1930.

In our own country the whole agrarian system needs reorganisation according to the present-day needs and conditions on

1 A. G. B. Fisher, *Economic Progress and Social Security*, p. 178.

2 N. Kaldor, *Characteristics of Economic Development*, p. 1.

3 B. Datta, *Economics of Industrialisation*.

4 N. Kaldor, *Op. Cit.* p. 9.

improved lines. This would include an increase in the net returns, reduction of production costs, better standard of living for farmer, less arduous work for the head of the undertaking and considerable saving of labour—whether paid or supplied by the family. The reorganisation will have to be made on the following lines :—

Firstly, by removing certain obstacles for the full utilisation of land resources through a radical scheme of reforms and effective planning with regard to land tenures, complete abolition of intermediaries of land, size of economic holding, inheritance, agricultural indebtedness, illiteracy and so on.

Secondly, by extension of land use through bringing more areas under the-plough by means of reclamation of all available waste and culturable land ; introduction of extensive zonal system of irrigation by harnessing all sources—major and minor—of water supply, establishment of land colonies on the land reclaimed, afforestation of all desert and infertile areas, and converting of areas now less economically used into more economic and income-yielding uses.

Thirdly, by intensification of utilisation of land already in use. This can be effected through improved methods in agriculture—such as production and distribution on the widest possible scale of natural and artificial fertilizers ; soil conservation and conservation of available moisture by dry-farming methods and the development of drought-resisting and fast-maturing crops ; use of improved kinds of seeds, application of better farming methods ; cultivation of heavy crops requiring additional application of labour and capital.

The Malthusian bogey of Diminishing Returns postulated in the recent Census Report is characteristic of a static economy and not of a dynamic economy. The possibility of using improved farming methods and larger doses of capital on the land certainly puts a limit to the operation of this Law and it is precisely these techniques which have been utilised by the Western countries to overcome the operation of the Law of Diminishing Return when they found that their population was increasing and their supply of agricultural land was limited. Modern inventions and discoveries are progressively working in favour of increasing returns not only in industries but also in agriculture. The U. N. O. Report rightly remarks, "If vigorous effort is put into developing the underdeveloped countries—say *India*—we see no reason why their national income should not rise at rates higher than the rate at which their population are currently increasing, or may be expect-

ed to increase²¹ In regard to production possibilities of agricultural commodities in India, Dr. Burns submitted the following estimates² :—

Commodities	Average product per acre	Estimated increment in percentage	Method of improvement
Rice	738 lb.	50	By variety and manuring
Wheat	640 lb.	100	by variety, manuring and irrigation
Jowar	484 lb.	20	"
Bajra	367 lb.	25	"
Maize	800 lb.	35	"
Gram	356 lb.	70	"
Sugarcane	15 tons	100 to 250	"

The yield per acre can be increased through better land use measures, *viz.*, by crop-rotation, by improvements in fallowing, by ridge cultivation (it increases the yield by 55 to 60%) by shallow holding (increases yield by 25%) and by double-cropping where secured irrigation is available.

But the Census Commissioner for 1951, conveniently forgets to mention these facts and concluded that our agricultural production can never increase by more than 30 per cent.³ He admits that intensive cultivation is disappearing and discusses the declining per capita cultivated land, double-cropped-area and the irrigated fields and comes to the conclusion that "During the second thirty-year period (1921-51), however, every one of these three factors declines steadily and was substantially lower in 1951 than in 1921."⁴ But he fails to draw the conclusion with regard to agricultural production. Here it will not be out of place to mention that the correctness of Dr. Burn's estimate has been proved by the following per acre maximum yields obtained in crop competition in U. P.⁵ :—

Rice, 4,531 lbs.; Wheat, 4,465 lbs.; Jowar, 2,319 lbs.;

Bajra, 4,063 lbs.; Maize, 4,991 lbs.; Potato, 60,637 lbs.

The realisation of such production targets clearly promises a bright future, which is sure to be brighter with the introduction of land reforms contemplated under the First and Second Five Year Plans and will remove the impediments in the way of introducing improved techniques of production and the march to industrialisation—and this in turn will guarantee a better standard of living.

1 U. N. O., *Measure for the Economic Development of the Underdeveloped Countries*, p. 45.

2 Dr. W. Burns, *Technological Possibilities of Agricultural Development in India*

3 *Census of India*, Vol. I. Part I-A.

4 *Ibid.*, p. 147

5 *Census of India*, Vol. II U. P. Part I-A., p. 269.

CHAPTER 3

UTILISATION OF LAND

Agriculture has always been the primary industry of India even from early days. The following table provides the data which go to prove that the proportion of population dependent on agriculture has been very large¹ :—

Population dependent on Agriculture

Year	Percentage	Year	Percentage
1872	65.00	1921	72.98
1891	61.06	1931	67.0
1901	66.50	1941	75.0
1911	72.2	1951	70.0

It will be seen that about three-fourths of the people in India depend on land for their sustenance.

The following table gives us the relevant figures relating to land use in India² :—

	In Million Acres							
	Average 1936-37 to 1938-39	Average 1939-40 to 1941-42	Average 1942-43 to 1944-45	1945-46	1949-50	1952-53	1954-55	
1. Area according to Village Papers	546	561	553	558	615	718	722	
2. Area under Forest	82	82	81	82	93	115	133	
3. Area not available for cultivation	91	96	92	92	96	120	122	
4. Other uncultivated land (excluding current fallows)	87	92	88	89	98	111	95	
5. Current fallows	49	50	49	54	58	68	57	
6. Net Area Sown	237	242	243	241	266	302	315	
7. Area Sown more than once	44	29	27	32	35	35	38	
8. Net Area Irrigated	67	44	47	46	48	51	53	

The total geographical area of India is 81.08 crore acres, but land utilisation statistics are available for 71.83 crore acres or 88.6 % of the total area. The total area cultivated annually is

¹ Calculated from various Census Reports, *Census of India*, Vol. I, Pt I, 1901, p. 439; *Ibid* for 1921, p. 284; for 1931, p. 313—4 and for 1951, Vol. I, Pt. A., p. 99; *Second Five Year Plan* 1956, p. 322.

² C. N. Vakil, *Economic Consequences of Divided India*, p. 153; *First Five Year Plan*, p. 153; *Census Report Paper* No. 2 (1952), p. 16-19; and *India*, 1956, p. 143.

30.24 crore acres, of which only 3.49 crore acres or 11.5 % bear crops more than once. The cultivated area works out to 1.2 acres per head of agricultural population. Forests cover 11.56 crore acres while there are 5.82 crore acres of culturable waste-land and 6.81 crore acres of fallow land. The need for keeping adequate areas under forests and pastures and the difficulties involved in reclamation operations tend to limit the expansion of cultivation to new areas. The following table shows the cultivated area in the reorganised States in 1953-54¹ :—

Classification of Area (1953-54)

State	(Thousand acres)							
	Total area according to Village Papers	Forests	Not available for cultivation	Other uncultivated land excluding fallow lands	Fallow lands	Net area sown	Total cropped area	Area sown more than once
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Andhra Pradesh	66,138	12,302	11,916	7,695	6,953	27,272	29,801	2,529
2. Assam	35,764	15,747	10,092	3,658	1,136	5,081	5,922	811
3. Bihar	42,441	8,841	5,515	2,881	5,972	19,232	25,336	6,101
4. Bombay	120,619	15,629	20,368	10,678	7,912	66,032	69,686	2,654
5. Kerala	9,372	2,460	1,042	1,027	512	4,331	5,218	887
6. Madhya Pradesh	107,130	33,617	11,441	18,068	6,464	37,540	41,547	4,007
7. Madras	31,367	4,757	5,488	3,811	3,876	14,034	16,777	2,743
8. Mysore	45,925	6,413	4,395	6,779	3,960	24,378	25,265	887
9. Orissa	38,401	10,125	5,329	6,164	2,667	14,116	15,079	963
10. Punjab	30,290	831	7,736	2,615	2,214	16,894	20,176	3,282
11. Rajasthan	84,591	3,260	18,392	22,217	14,032	26,690	28,059	1,379
12. Uttar Pradesh	72,511	8,479	1,116	8,208	3,749	10,959	50,632	9,673
13. West Bengal	22,195	2,088	3,769	1,914	1,177	13,217	15,378	2,131
14. Jammu and Kashmir	5,902	1,380	1,695	721	425	1,691	1,818	137
15. Delhi	366	(a)	79	46	14	227	228	1
16. Himachal Pradesh	2,303	400	160	1,018	58	667	1,019	352
17. Manipur	346	37	(b)	96	10	203	204	..
18. Tripura	2,634	1,574	65	472	61	462	539	77
19. Andaman & Nicobar Islands	78	34	16	15	1	12	12	(a)
20. Laccadive, Minicoy & Amindivi Islands								
All-India	718,973	128,024	118,614	98,084	61,193	313,058	351,705	33,647

1. Government of India, *Agricultural Statistics of Reorganised States, 1956*, pp. 2-3.

(a) Below 500 acres.

(b) Included under 'Forests'.

Our land supports a greater number of people per 100 acres than what it does in other countries. There have been 31 persons per 100 acres of farm land in Poland as against 24 in Czechoslovakia; 20 in Roumania; 42 in Yugoslavia; 33 in Bulgaria, 48 in Greece; 6 in U. K.; and 148 in India.¹ It will be noticed that in contrast to all these countries Indian land supports a very large number of people per 100 acres which is in a way overcrowded. For over-population reduces the standard of living and cash resources of the individual peasant. Therefore, no agricultural development which needs capital can be carried out, the yield per acre declines, and the competition of overseas agricultural exporting countries with technical aids at their disposal reduces the possibilities of export. This in turn lowers the income per head of the rural population, and reduces the internal market, still less money is available for improvement or for educating the farming population in new directions. Since India is predominantly an agricultural country, the man-land ratio is an important criterion for measuring the pressure of population.) The relative man-land ratio in India and certain other countries may be obtained from the following table² :—

*Land Area per Capita (in Gents)**

Country	Total	(Arable land including fallow and orchards)	Permanent Meadows and Pastures	Forest and wood lands	Other land Areas
India	225	97	...	26	102
China	503	48	103	45	30.7
Indo-China	640	37	...	406	197
Japan	109	18	2	74	15
France	322	123	72	65	62
Italy	156	82	27	32	15
U. K.	119	37	60	7	15
U. S. S. R.	3,046	287	161	1,171	1,427
U. S. A.	1,264	302	439	414	109

*(1 cent% 01 acre)

It may be concluded from this table that though the margin of reserve lands by way of meadows, pasture and woodlands is much lower in India than in other countries like Japan, Italy or the U. K., but it will be somewhat misleading to arrive at any such conclusion without considering at the same time the relative technological developments in these countries. India has a much larger proportion of her population engaged in agriculture than

1 J. E. Russel, *Agrarian Problem from Baltic to the Aegean*.

2 B. R. Sen, *The Problem of Population and Agricultural Productivity in India in Agricultural Situation*, Sept. 1954, p. 523.

in Japan, Italy or U. K.¹ In addition she has a very large cattle population and the extremely low yield per acre in India makes her economic position much worse than that of Italy or Japan in spite of the latter's low land-man ratio.

There has been a tremendous increase in population with the net result that not only the total land per capita but also the proportion of cultivated land per capita has been steadily shrinking in size. It will be seen from the following table that there are considerable regional differences in respect of land resources in relation to population, the extent of utilization, and the intensity of cultivation and the crops grown² :—

Population and Land Resources (in Acres)

Census Zones	% Increase in Population 1921-51	Land area per capita	Topographically usable area per capita	Per capita net sown area	% of net sown area irrigated	% of net sown area sown more than once	% of Population depending on Agriculture
North India	35.3	1.1	0.9	0.6	29.1	24.2	74.2
East India	43.5	1.9	1.2	0.6	22.4	20.4	75.6
South India	46.2	1.4	1.0	0.5	28.5	13.3	64.3
West India	60.1	2.3	1.6	1.2	4.5	3.2	59.7
Central India	40.2	3.5	2.5	1.3	5.6	7.5	73.2
N. W. India	44.6	3.5	1.8	0.9	33.2	18.7	66.0
All India	43.8	2.1	1.4	0.7	17.8	13.4	70.0

The diminishing ratio of land to population shows that available land for cultivation is not keeping pace with the increase in population. Decade by decade we are having the increasing number of people than are necessary fully to utilise such resources of agricultural production as we have. While till 1931 at any rate it was a doubtful question whether the per capita production was steady, rising or falling, it has never been doubtful in recent years that for the full utilization of the productive resources that we have and that we are likely to add we need a much smaller population than we actually have.

1 The respective figures for Japan are 40.7% (1919); U. K. 5.4% (1919); U. S. A. 08.3% (1950); Italy 48% (1948); Germany 24.3% (1919); Denmark 29.1% (1918); (vide U. N. O. Statistical Papers Series E. No. 3 (1931)).

2 B. Rammurti, *Agricultural Labour : How they work and live* (1954), p. 2-3.

The following table gives the cultivated area per capita in some of the States in India for 1941 and 1951 :—

<i>Cultivated Area per Capita, 1941 and 1951</i>		
States	Net area sown per Capita (Acres)	
	1941	1951
Total India	0·7	0·7
Assam	0·7	0·5
Bihar	0·5	0·5
Bombay	1·1	1·1
M. P.	1·2	1·4
Madras	0·6	0·5
Orissa	4·8	0·8
Uttar Pradesh	0·7	0·6
West Bengal	0·3	0·5
Ajmer	0·3	0·5
Coorg	0·9	0·9
Delhi	0·2	0·1

According to the new pattern of agricultural economy in the reorganised States, the per capita land area is highest in Rajasthan equalling 5·32 acres per head, followed by M. P. 4·19 ; Bihar 1·10 ; Bombay 2·54 ; Mysore 2·44 ; Andhra 2·16 ; Punjab 1·88 and U. P. 1·2, acres Madras 1·07 ; Orissa 2·63 ; West Bengal 0·84 and Assam 6·02 per head. The cultivated area per head of agricultural population in these States is highest in Rajasthan, *i.e.*, 2·07 acres, followed by Bombay 1·95 acres ; M. P. 1·74 acres ; Madras 1·72 Orissa 1·21 ; Punjab 1·50 ; U. P. 0·87 ; West Bengal 0·80 ; Bihar 0·62 and Assam 0·77 and Andhra 1·2 acres.¹

The following table shows the progress of cultivated area in India :—

	<i>Cultivated Area in India</i> (In million Acres)		Area sown more than once
	Gross cultivated	Net sown Area	
1943-44	299·7	246·3	33·4
1944-45	279·8	245·7	34·1
1945-46	276·4	241·9	34·5
1946-47	276·5	242·8	33·7
1947-48	278·1	245·5	32·6
1948-49	276·6	243·2	33·4
1949-50	321·3	283·2	38·
1950-51	325·9	293·4	32·5
1951-52	329·2	295·0	34·2
1952-53	339·8	304·7	35·8
1953-54	351·7	313·1	38·6
1954-55	352·4	314·9	37·5

¹ Ministry of Food and Agricultural, Government of India, *Agricultural Statistics of Reorganised States*, 1956, p. 1.

The sharp increase in the area sown more than once, from 1943-44 to 1949-50, may have been partly due to the expansion of cultivated area as a result of reclamation and extensive cultivation, and partly by agricultural technology. The area sown more than once can be increased still further.

System of Cultivation

On account of a wide range of physical and climatic conditions no one system of agriculture is found in India, the agricultural practices being adapted to regional peculiarities. Agricultural practices followed in different parts of India are :—

(i) *Wet cultivation* is mainly followed in the new alluvial tracts where the rainfall is over 80", e.g., in the Central and Eastern Himalayas and lower Bengal and on the Malabar coast. The land in these areas is subject to multiple cropping and the principal crops grown are paddy and jute.

(ii) *Humid farming* is practised in the alluvial and black-cotton soil regions, where the rainfall is between 40 and 80", e.g., in the Central Ganges plain, Deccan and the Madhya Pradesh, irrigation developing westward and wet cultivation eastward. Double-cropping supplemented by a catch crop is usually done.

(iii) *Irrigation farming* is developed in regions of older alluvial tracts receiving rainfall from 20 to 40", e.g., in the Upper Ganges plain, the Punjab plain, and Northern Madras. One or two crops are raised. In the Punjab various canal colonies have been established.

(iv) *Dry farming* is characteristic of the arid uplands where the rainfall is less than 20", e.g., Bombay, and Western U. P. Only one crop of wheat or millets is possible in two or three years.

(v) *Jhuming* cultivation is generally practised in parts of Assam, Madhya Pradesh, S. E. Rajasthan and the Western Ghats. Under this form of cultivation, a patch of forest is burnt down and the ashes cleared of soil. The seed is then sown broadcast in the ashes and lightly ploughed in at the first fall of the rain. In some cases a crop is taken from the same clearing for two or three years in succession but a new patch may be selected annually. Such type of nomadic cultivation is known as *Taungya* in Burma, *Jhum* on the north-eastern frontier, *Dahya* in Central India, *Khil* in Himalayas, and *Kumari* in the Western Ghats.¹

System of Agricultural Cropping

The cropping and agricultural practices vary to an extraordinary degree from place to place. Though the differences are at first sight puzzling but they may be explained and the general principles

of simple nature can be formulated. Like agriculture in every country, India's agriculture is determined by four factors: her geography, climate including rainfall, soil and the type of population. India is such a vast country comprising territory both in and out of the Tropics, rainfall varying from less than 5" to 500" hot and damp climate, with vegetation of tropical luxuriance; and the country which is a bleak desert with a climate of almost European severity, that observations which are true of one region may not be true of the other. And even within these large natural divisions, conditions vary from district to district; sub-division to sub-division; one village to another so that before giving advice as to possible agricultural improvements, minute regard must be had to local requirements.

In a large country like India, the productivity of land cannot but differ from place to place. We have on the one side the exceedingly fertile black cotton soil and the alluvial land of Indo-Gangetic delta and on the other the barren rock of the Vindhyan hills and the sands of the Western Rajasthan. Intermediate between these two extremes is to be found almost every variety of fertility. Speaking generally we may say that land in India is fertile.

Main Harvests

The actual produce of any one year depends on the amount and distribution of the rainfall. The periodicity of the season often allows of two and in a few cases three harvests in the year. Double cropping is possible in 38 million acres or 11.5% of the total net cultivated area of India.

1. Kharif

Agriculture in India is a seasonal industry. The commencement of the monsoon rains in June inaugurates agricultural operations. The sowings made in rains lead to the harvest in the autumn (September or October) which is shown as *Kharif* Crop. These crops require much water for their growth and, therefore, are grown as soon as the south-west monsoon commences. The principal *kharif* crops are rice, jua, bajra, maize, cotton, urd, mung, sesamum, masur, jute, hemp, tobacco, sugarcane, forage grasses and leafy vegetables.

2. Rabi

The second crop season begins in autumn. The winter is usually a rainless period, and in absence of artificial irrigation the crop matures in the moisture left in the soil by the monsoon, the heavy dews of winter and any occasional or casual rain that the cultivator's good luck may bring. This crop is sown in October and November and is harvested in March and April and is known

as *Rabi* Crop. The principal *rabi* crops are wheat, barley, linseed, rapeseed and mustard, peas and beans, scrub-fodder, potatoes, root and tuber vegetables.

3. Zaid or Catch Crop

Besides these Zaid, a catch crop, is also raised by artificial irrigation in humid regions. The chief Zaid crops are melon, water-melons, cucumber, leafy and tuber vegetables.

The conditions affecting the growth of these two crops being different, the character of the two kinds of the crops differ. This difference in character, however, is specially marked in Northern India, it is less marked in Bengal and still less in Madras. During the period of their growth they are subject to a considerable degree of cold, which limits the choice of staples. In Bengal and Madras, very much the same kinds of crops may be grown in summer and winter. In Bombay which gets almost the whole of its rainfall from the south-west monsoons, *kharif* crop is the chief kind of crop. Madras grows chiefly the *rabi* crops, for it is in winter that the north-east monsoon brings rain to the State. In the Northern India the south-west monsoon rain gives the condition necessary for the growth of the varied *kharif* crops while in winter weather is well suited to the *rabi* crops.

The following table shows the crop season in India¹ :—

Crop-Season		
<i>Principal Crops Seasons and Duration</i>		
Crop	Season	Duration
Rice	Winter	5½—6 months
	Autumn	4—4½ "
	Summer	2—3 "
Wheat	Rabi	5—5½ "
Jowar	Kharif	4½—5½ "
	Rabi	4½—5 "
	Zaid Kharif	2½ "
Bajra	Kharif	4½ "
Maize	Kharif	4—4½ "
Ragi	Kharif	3½— "
Barley	Rabi	5—5½ "
Gram	Rabi	6 "
Sugarcane	Perennial	12—15 "
Sesamum	Kharif	3½—4 "
	Rabi	5 "
Groundnut	Kharif	Early 4—4½ "
		Late 4½—5 "

¹ India, 1936, p. 157.

Crop	Season	Duration
Rape and mustard	Rabi	4 —5 „
	Zaid Rabi	4 — „
Linseed	Rabi	5 —5½ „
Castor	Kharif	Early 6 „
	Others	8 „
Cotton	Kharif	Early 6 —7 „
		Late 7 —8 „
Jute	Kharif	6 —7 „

Crop Pattern

The large extent of its area and a great variety of the physical and natural features and climate, combined with natural fertility of the soil, enable the country to produce almost every kind of vegetable life. In fact, the flora of India is more varied than that of any other area of the same extent in Asia, if not in the world. Here we find not only the tropical products but also the products of the temperate zone as well. The most important among the tropical products produced here are : rice, coffee, sugarcane, millet, jute, cinchona, spices, India rubber, and guttaparacha, pineapples, bananas and other kinds of tropical fruits. The chief kinds of sub-tropical products grown are : cotton, opium, and tea. Of the products of the temperate zone the more important are : wheat, maize, barley, pulses, potatoes, hemp and flax and various kinds of fruits. Besides these many miscellaneous articles are produced here such as various kinds of oilseeds, gums, timber, indigo. Thus the striking feature of Indian agriculture is its amazing variety.

Of the total cropped area, 22·9 per cent is devoted to rice ; 7·5 per cent to wheat ; 30·4 per cent to other cereals ; 15·2 per cent to pulses ; 3·4 per cent to groundnut ; 5·2 per cent to other oilseeds ; 1·5 per cent to sugar ; 4·6 per cent to cotton ; 0·5 per cent to jute and 8·8 per cent to other crops.¹

It is interesting to note that in India we have regional specialisation of crops. Thus *rice* is grown in the Ganges Valley, the mountainous districts of the Punjab, U. P., Bihar, West Bengal, Assam, Western Ghats and the coastal belts of Orissa and Madras. *Wheat* is extensively cultivated in Punjab, Pepsu, U. P., M. P., and Eastern Rajasthan. *Sugarcane* is grown in the Gangetic plain, Madras, Mysore, Orissa, Andhra and the Punjab. *Oilseeds* such as groundnut, linseed, castor, beans, rape and sesamum are grown in northern Madras and S. E. Rajasthan. *Cotton* happens to be a special product in specific region of Bombay, M. P., Rajasthan, Mysore and the Punjab. *Tea*

is cultivated mainly in Assam hills and the Darjeeling and Nilgiris Hills, while *Coffee* is of special interest in Coorg, Madras and Mysore. *Tobacco* has spread itself over whole of India, generally with major contributions coming from West Bengal, Bihar, U. P. and Rajasthan. *Jute* is largely grown in Cooch-Bihar, Assam, West Bengal, Bihar, and Orissa Coastal regions. Rubber, pepper and Cardamom plantations are to be found in the Annamalai and Cardamom Hills. Thick cocoanut groves along the Malabar coast yield Coir and Copra; and the bulk of the country's supply of cashew nuts also comes from these parts.

Cultivation in India is mostly confined to Madras, Bombay, West Bengal, Uttar Pradesh, Punjab, Bihar, Orissa and Madhya Pradesh. The areas where the cultivation of land is difficult are: (a) Eastern Bombay and the Madhya Pradesh highlands are generally infertile excepting the black soil; (b) Assam's unhealthy climate in several districts as well as dense forests and mountain restrict cultivation to definite areas; (c) The Himalayas, where mountains prevent large-scale cultivation; (d) Rajasthan, an arid region where in the west due to Thar desert and in the south due to hilly tract and lack of water cultivation is extremely difficult; (e) Orissa where malaria is highly prevalent, and (f) Madhya Bharat, large parts of which are infested with Kans weed. All the same, cultivation of land in these areas is carried on in places which offer better conditions.

Besides these, the whole of the country in the south between the Ghats and the sea-coasts from Goa to Cannanore can also be developed to yield food crops. This region is known as *Malnad*. This region is characterised by (1) the rainfall invariably over 60 inches; (2) evergreen forests; (3) the low density ranging from 200 to 300 persons per square mile; (4) the chief crops are paddy, betelnut, pepper, coffee and cardamom. In spite of the great geographical advantages of the Malnad area, it is at present in a backward position due to excessive rainfall, unhealthy climate, prevalence of malaria, inadequacy of communication and scarcity of labour. If these problems are solved, Malnad may contribute substantially towards the production of foodgrains in the country.

Problems of Uncultivated Areas

Although large uncultivated areas exist yet they are not cultivated at present. The chief reasons why culturable waste land is not cultivated are as follows:

- (1) Lack of water supply, —
- (2) Lack of drainage,
- (3) Unhealthy conditions chiefly due to malarious atmosphere,

- (4) Deep-rooted poisonous weeds and grasses,
- (5) Low fertility of the soil,
- (6) Salinity and alkalinity,
- (7) Liability to damage by wild animals,
- (8) Absence of adequate marketing and transport facilities,
- (9) The peculiar land revenue policy in most of the States.

Extension of Cultivation

In view of the heavy pressure on land in certain States it is necessary that planned migration should take place from the heavily populated regions to the sparsely populated regions of the country. Generally speaking, U. P., Bihar, Orissa, West Bengal and Madras have all outstepped an equilibrium density. The Lower Gangetic plain, Upper Gangetic plain, Malabar-Konkan, South Madras and the coastal regions of Madras and Orissa are all the areas of high density of population. They cover 179 million acres of land but support 184 million persons with an average density of 660 per square mile. Whereas Sunderbans in the Lower Gangetic delta, Tarai in the Himalayan region, Western Rajasthan and major parts of the Deccan tableland are very sparsely populated. Here large areas of waste lands are available for cultivation but the main difficulty is that of water in some areas, of dense forest in others, and of unhealthy climate in yet others. Until all such areas are brought up under cultivation by measures of land reclamations, agricultural engineering and irrigation, large-scale jungle clearance, road making, anti-malarial operations, conservation of soil and planned migration from densely populated areas for agricultural colonization cannot be successful.

The scope for increasing the area under land cultivation is of course limited by the total extent of cultivable land available and the actual extent of land that can be made available, through techniques of land use. The two aspects of the problem are : (1) absolute quantitative limit set to an increase in cultivated area, and (2) the improvement of pattern of land use. The technological possibilities in the latter can indicate the potentialities for an adjusted pattern of land use for each region in relation to its land use capacity. This would mean, on the one hand, the reduction of idle and waste lands in each region by reclamation and land improvement measures and, on the other hand, securing such alternations in the existing pattern of land use as are necessary for conservation of soil and water.

As said before of the total geographical area (811 million acres), about 370 million acres of land is under agricultural use,

and the residual area of about 111 million acres is returned under 'other uncultivated land excluding current fallows.' Only a small portion of this residual area can be brought under cultivation at costs which the expected returns from their cultivation would justify. In 1949-50, in the 9 States which, on the basis of some rough survey by the primary reporters themselves, indicated the extent of really culturable area included in about 47 million acres under this residual head in these States, about 11 million acres only were reported to be culturable. This ratio would indicate that the total culturable area included in the 113 million acres reported in 1951-52, under 'other uncultivated land excluding current fallows', about 26 million acres only might have been returned as really culturable. In the collection of these figures, however, neither the element of preliminary costs needed to reclaim and develop these lands nor their suitability for human habitation have been taken into account. At best they can be taken to represent an almost absolute upper limit to the extent of new land which can be reclaimed for agricultural use in the course of next three or four decades. Further there are 68 million acres of fallow land, an appreciable proportion of which can also be put under crops if a scientific system of crop rotation is introduced. It is true that in spite of the pressure of population relatively small extension of cultivation to waste lands has taken place during the last 40 years. But this is more due to the fact that the exploitation of such waste lands has not been within the resources of the ordinary cultivators rather than due to the unsuitability of all these lands for cultivation. By State or State-sponsored efforts it may be possible to bring a large proportion of these waste lands under cultivation during the next few decades. In the following regions in particular where the topographically usable area per capita is substantially higher than the all-India average (1.4 acres) and rainfall is fairly high, *e.g.*, Orissa Inland (2.5 acres), Assam hills (6.98 acres), Manipur (2.69 acres), Tripura (2.78 acres), N. W. Madhya Pradesh (2.7 acres), Vindhya Pradesh (3.17 acres) and Bhopal (3.87 acres), there is a considerable scope for land reclamation and colonisation provided sufficient financial and technical resources are available for operation on a scale large enough to be really effective. The total amount of topographically usable area in these 9 regions is about 135 million acres and at least 25% of that area should be available for reclamation and colonisation. But it is curious to note that the 1951 Census Report has made an under-estimate to a certain extent in regard to the possibility of extending the gross area under cultivation by increasing the acreage under double-cropping and by land reclamation. It puts the maximum increase in the crop acreage to about 30 million acres over and above what obtained in 1951. But with the extension of irrigation it should be possible to extend the area under double-cropping considerably.

India has also several million acres of cultivable wasteland infested by mosquitoes and malaria. It is possible to make these areas agriculturally fit and malaria-free. The rice-growing areas in India are coincident with endemic malarial tracts. There are several tracts in India which are very fertile but have remained mostly uncultivated because of the hyper-endemic malarial conditions. Such tracts are (i) a horizontal strip of Sub-Himalayan tract-*tarai* ; (ii) a vertical strip along the Western Ghats and (iii) a strip along the Eastern Ghats enlarging into a wide belt at the top merging into Madras, Orissa, Madhya Pradesh and Hyderabad. In all these areas, rice cultivation may be very profitable as the rainfall is between 50"-100" per year—malaria affects man but not the soil. Mosquitoes and rice plants are both sub-aquatic—one is aquatic fauna and the other is aquatic flora. They grow under the same conditions of high temperature, high humidity and heavy rainfall. It is possible to control mosquitoes and suppress malaria and to grow more rice to feed the country. Thus, as a short-term programme, efforts should be made to increase the production of rice by controlling malaria.

If waste land is to be brought under cultivation it is imperative that the absolute minimum of requirements are provided. The principal requirements for bringing under cultivation such lands may be grouped as :—

- (1) Adequate provision of labour of men and cattle.
- (2) Adequate provision of capital for building, tools, implements, which the cultivators have to supply and also for public services like transport, water supply, which the State will have to supply.
- (3) Essential social services such as reclamation from forests, or wild beasts or dangerous diseases like malaria or insalubrious conditions, social and culturable advantages. The problem, therefore, consists in how to supply these requirements in order to make the land capable of being brought under cultivation.

The measures taken to encourage the bringing of new land under the plough have been various, such as, interest-free loans, rent-free leases for a term of years, rebates on assessment of land revenue, the supply of water for irrigation free or at concessional rates, the supply of seed at *cheap rates and the amendment of tenancy laws* in some areas.

In order to bring waste land into cultivation and for that purpose to attract the necessary labour and capital to it, it may be entrusted, for purposes of cultivation and for a limited period, to some appropriate local organisations or individuals working together on a co-operative or collective basis. The entire local organisation of such land will have to be so modelled as for the cultivators to own in common the results of such cultivation. The share

of each cultivator in the distribution of produce would be determined according to labour or capital and in production the extent of land to be filled and all farming operations carried on, would be parcelled out according to the advice of the village or local council of such land.

The land may be handed over to such organisations or individuals for a period of, say, 30 years. During the first five years, no charge should be made on the produce of such land by way of rent or revenue demand ; nor should such charges be treated in any way as arrears to be paid off when the land begins to yield a surplus. The yield of the cultivated portion, if and when it results, should be distributed amongst the individuals on a pre-determined basis, *i.e.*, according to the proportion of labour and material supplied by each such cultivator engaged in the cultivation of such land. In the five years that follow a limited demand may be made on the produce by the way of rent or revenue which should be sufficient to pay capital expenses. After the first ten years, the charge by way of rent or revenue may be raised, if the produce justifies such an increase so as to meet the interest and sinking fund charges in roads, transport facilities, lighting, drainage, water supply, etc.

Land Reclamation

The land reclamation activity has a range of objective, which includes the improvement of the hygienic conditions of the large tracts of land, extension of area under the cultivation, employment for maximum number of workers, internal land settlement and creation of new industries subsidiary to agriculture.

The reclamation of the torrent-ruined land which can be made productive again by a simple type of afforestation, is the responsibility of the community rather than the individual, for if it is to be successful and permanent it requires to be done throughout the length of the torrent bed and not just at a few places. It can also be attempted by the individual and the method is simply to confining them to a slightly narrower bed by means of 'Heering bone' plantations of sand-loving plants as *nara* and *banha* set at right angle to the torrent's direction. Behind this outer defence *kana* grass is planted fairly thickly in the sand. The effect is to persuade the floods to deposit part of their load of fine silt there and thus raise a new platform there. If the edges of this are kept fully protected with a dense belt of every type of trees, grass and shrub, the remainder can be planted up with *sisoo* or sown with *khair* or *babul* and so made fully productive as well as a defence for the fields behind.

Reclamation of alkali land also presents another important problem. The soils characterised by an excess of soluble salts can be reclaimed by leaching alone, while the soils containing normal amounts of replaceable sodium can be best utilised by reconversion of sodium clay to calcium. In Sind application of heavy doses of irrigation water, followed by growth of a suitable crop in rotation has been found most effective in reclamation of *kalar land*. In the Punjab, simple leaching combined with deep cultivation with the aid of steam tackle has given successful results. It is of interest to note that the Punjab Irrigation Research Institute adopted the construction of deep drains around blocks of suitable size followed by heavy leaching combined with the application of gypsum for the reclamation of canal-irrigated land, which had gone out of cultivation due to excessive alkalinity associated with a marked rise in the sub-soil water level. In U. P., the *Usar Land Reclamation Committee* was set up in 1938 to examine the entire problem of Usar Lands. It made the following observations for the reclamation of Usar Lands: (1) Electroculture for improving intractable alkali areas has not yet established its effectiveness; (2) Gypsum, sulphur, iron sulphate and alum will generally be too expensive as agents for reclamation; (3) The possibilities of using molasses as a reclaiming and fertilizing agent should be explored further.

This Committee recommended for the waste areas—leaching—where surplus canal water is available, sinking well and setting up of *bunds* for impounding water; and for the uncultural wastes it recommended a systematic policy of afforestation.

Progress in Reclamation of Waste Lands in India

Unfortunately until very recently, no attempts were made to find out the extent of culturable waste lands that could be reclaimed. Up to 1946 even the Grow More Food Schemes were confined only to efforts at diversion of area from commercial crops to food crops and increase in the productivity of land already under cultivation. The Bengal Famine Commission in 1945 and the Foodgrains Policy Committee of 1947 made for the first time some practical suggestions in this respect. The availability of some 300 tractors left by the United States and other allied governments gave a spur to this movement for land reclamation.

In India the need for reclamation and settlement of new lands has been realised as a help in the solution of two problems, *viz.*, (a) Urgency for increase in production of certain agricultural commodities, and (b) the need for the rehabilitation of certain classes of people for which, the Government felt, they had a special responsibility.

The schemes for reclamation of land fall into two classes :

- (a) land reclamation by the Central Government through the Central Tractor Organisation,
- (b) reclamation by the State Government of—
 - (i) Government waste lands for allotment for cultivation to private parties ;
 - (ii) private uncultivated lands already occupied whose owners require help for reclaiming the lands for new or more intensive cultivation.

(a) Land Reclamation by the Central Government

The Central Tractor Organization started its operation in 1947-48 with about 200 old tractors purchased from the American Army Disposals and it was at that time assigned the task of reclamation in 7 years about 3 million acres of weed-infested lands of the states of U. P., M. P. and Bhopal. This equipment was found to be serviceable only up to 1950-51. After this most of the tractors had to be scraped. By then C. T. O. had reclaimed about 465 thousand acres of weed-infested land. During the two years 1949-50 and 1950-51, 240 tractors of the heavy crawler type were procured by the C. T. O. from the American Army Disposals with the help of a loan of 10 million from the International Bank. The main activities of the C. T. O. are (i) reclamation of kans-infested land ; and (ii) jungle clearance of the lands offered for such operations by the State Governments on a "No Profit, no loss" basis. The cost incurred is realised from the State Governments in instalments.

Having a strength of about 2,000 persons, the C. T. O. operates today the largest fleet of heavy tractors in the world for agricultural purposes having 18 units, 3 divisions, 2 base camps and 270 heavy crawler tractors.

Over 1 million acres of kans-infested land in Central India (M. P., M. B., and Bhopal) and about 41,000 and 48,000 acres of jungle land in U. P. and Bhopal respectively have been reclaimed so far by the C. T. O. Of the sum of 35 crores provided in the First Plan for the reclamation and improvement of 74 lakh acres of land, Rs. 10.22 crores were earned for the C. T. O. which had a five-year programme of reclaiming 14 lakh acres. The figures below show the area reclaimed during the first four years of the Plan¹ :—

Year	Area reclaimed (Lakh acres)
1951-52	2.53
1952-53	2.66
1953-54	2.88
1954-55	1.87
Total	9.94

¹ Progress Report of the Five Year Plan for 1954-55.

In all about 1 million acres of land have been reclaimed in the first four years of the Plan.¹

In the following table is given the state-wise reclamation of land :—

State	1951-52	1952-53	1953-54	1954-55
I. Kans Eradication				
U. P.	0.39	0.34	0.56	—
Madhya Pradesh	0.72	0.63	1.10	1.10
Madhya Bharat	0.45	0.91	0.75	0.52
Bhopal	0.79	0.61	0.35	—
Total	2.35	2.49	2.76	2.00
II. Jungle Clearance				
U. P.	0.20	0.17	0.05	0.011
Bhopal	..	..	0.04	0.048
Total	2.55	2.66	2.85	2.59

In the first two years the States were charged Rs. 52 per acre for the reclamation work. The rate was increased in 1953-54 to Rs. 55 per acre for blocks of 200 acres and above and Rs. 65 per acre for blocks of 100 to 200 acres. The charges for 1954-55 were reduced to Rs. 45 per acre.

The Central Organisation has also helped in the rehabilitation of more than 3,000 families of displaced persons from East Bengal, West Pakistan as well as political sufferers and ex-servicemen. They have been settled in the Tarai area of U. P. where the malignant malarial and jungle lands have been converted into prosperous agricultural farms and flourishing co-operative colonies.

(b) Reclamation by States Tractor Organisation

The C. T. O. undertakes only reclamation operations and its activities have been limited to four States where large blocks of land are available. A number of State Governments have tractor organisations of their own partly for reclamation but mainly for follow up cultivation.

The responsibility for getting the newly reclaimed lands actually cultivated rests upon the State Governments. In U. P. there are four main colonization schemes ; Ganga Khadir in the Meerut District (where a jungle-covered tract of nearly 47,000 acres has been cleared and sown) ; Tarai and Kashipur in the Nainital district (where nearly 50,000 acres of useless land have been brought under the plough) ; and Dunagiri in Almora district. Three more areas, namely, Manunagar in Rampur district,

¹Progress Report of the Five Year Plan for 1954-55, p. 69.

Bharasar in Garhwal district and north Afzalgarh in Bijnor district have also been selected for settlement. In colonization areas lands are allotted only to agricultural graduates, agricultural diploma-holders, political sufferers, landless labourers, and displaced persons from Pakistan.

In formation of its schemes for development and settlement of new areas, the U. P. Government had kept three objectives in view : (i) extension of cultivation to culturable waste lands available for reclamation in order to help in the solution of India's food problem, (ii) settlement of certain classes of people who could not easily find gainful employment in the existing rural economy of the State, and (iii) promotion of application of improved agricultural techniques both in the technological and organisational spheres.

Various difficulties had to be encountered before the land could be used for cultivation. Heavy clearance and reclamation operations had to be undertaken ; means of communication had to be improved through the construction of roads and culverts, and loans had to be given to the colonists for construction of pucca houses, and drainage system had to be improved and anti-malarial operations had to be undertaken through an Anti-Malarial Organisation set up specially for the purpose.

In Madras State the State Tractor Organisation with 302 tractors had reclaimed about 250,000 acres of private and Government waste lands up to the end of November 1953. Only about 18,000 acres of this reclaimed land has been settled with new colonists through 49 land colonisation societies.

In Bhopal with the help of the C. T. O. about 2,00,000 acres of land was reclaimed during 1950-52 of which only 20,000 acres were government waste, the rest belonging to private owners.

In Bombay for the development and settlement of difficult areas which have been abandoned due to various reasons like ravages of malaria or wild animals, pressure of forests, water-logging, etc., the State Government have specially established a Board called the Khar Land Development Board which gets these lands reclaimed and improved through anti-malarial measures, establishment of gun clubs, clearance of superfluous forest growth, provision of drainage. Under the Five Year Plan, the Development Board is to reclaim about 125,000 acres of land.

In Assam, about 13,000 acres of reserved forests are being reclaimed through heavy tractors to re-settle agriculturists.

In Madhya Pradesh the reclamation of land infested with the dreaded *Kans* is one of its many outstanding performances.

The following table gives the achievements reported by the States¹ :—

State	Plan Target	Achievement in	
	(Acres)	1951-55	1954-55
Hyderabad	131,500	103,595	26,205
M. B.	103,707	58,976	17,683
Bombay	531,051	147,870	16,469
Andhra	101,970	114,220	N. A.
U. P.	162,000	36,518	5,000
Punjab	Not fixed	42,704	N. A.
Orissa	15,300	9,878	709
U. P.	25,600	8,822	4,411

(c) Reclamation of Private Wastelands by Owners themselves

For these schemes the State Governments are offering incentives like remission of land revenue for the first few years of cultivation of lands newly brought under cultivation, grants of loans for purchase of equipment and other necessities for cultivation, etc.

Land Improvement Schemes

In addition to schemes of land reclamation and mechanical cultivation, contour-bunding, and other land improvement works, mainly undertaken with the help of manual labour, are in operation in various States. The progress of these schemes during the first four years of the Plan is indicated below :—

Scheme	1951-55 (Lakh acres)
1. Reclamation by S. T. Os.	13.34
2. Mechanical cultivation	5.82
3. Contour-bunding	33.79
4. Other land improvement works	7.68
Total	60.63

During the Second Plan it is proposed to reclaim 1.5 million acres of land and to carry out land improvement measures over 2 million acres of land through C. and S. T. O. The C. T. O. will undertake during the next two years the reclamation of about 96,000 acres of fallow and jungle land and the ploughing of about 149,000 acres of land. The Plan also provides for the establishment of one tractor training centre and a tractor testing station to examine the suitability of all types of tractors.

¹ *Progress Report of the Five Year Plan for 1954-65*, p.69.

CHAPTER 4

SOIL PROBLEM IN INDIA

The importance of the study of the Indian soil cannot be overemphasized specially when agriculture forms the predominant occupation of the majority of our countrymen. The agriculturists, horticulturists and the forest officers are all in a way connected intimately with the question of the soils. For unless the nature of the soils is properly understood, it is not possible to derive maximum of the produce from the soils.

Soil Groups

The Indian Council of Agricultural Research set up an All India Soil Survey Committee, which submitted its report in 1953. According to this Committee, in India the following soil groups are found¹ :—

(1) Red soils ; (2) Laterite soils ; (3) Black soils including Black Cotton soil ; (4) Alluvial soils ; (5) Forests and Hill soils, (6) Saline and Alkaline soils and (7) Peaty and marshy soils.

1 Alluvial Soils

(Agriculturally the most important soils are the alluvial ones which occupy extensive tracts of land in Northern, North-western and North-eastern parts) and include greater parts of Gujrat, Rajasthan, East Punjab, Uttar Pradesh, Delhi, Bihar and Assam (centre areas of Lakhimpur, Darang, Sivsagar, Kamrup, Goalpara and parts of Garo Hills), West Bengal, the Godawari, Kistna and Tanjore districts of Madras and the strips extending along the eastern and western coasts of the Peninsula. The depth of this soil exceeds 1600 ft. below the ground surface. These soils are derived mainly from the debris brought down from the Himalayas or from the silt left by the old sea which has not retreated. These soils differ in different parts of the country in physical texture and chemical composition. In north and north-west India it is dry, porous and in some places sandy giving rise to crops not requiring the retention of a great deal of moisture about their roots. In Bengal, it becomes more compact, less coarse and moist where rice, sugarcane and jute are largely cultivated ; while in the deltas of the Peninsular India, it is actually clayey, non-porous and of dark colour. The chief advantages of porous and light soils are that they are easily worked by plough and easily permeated by water leading to greater fertility of land

¹ I. C. A. R. Bulletin No. 73 on All-India Soil Survey Scheme (1953), p. 13.

where water supply is abundant ; but their great defect is that they allow water to sink into the lower strata, and are unsuitable for the growth of those crops which require the retention of great deal of moisture about their roots and thus they cause infertility in regions where showers are not frequent.

Alluvial soils are rich in chemical properties. Phosphoric acid, potash, lime and magnesia are found in sufficient quantities but are deficient in nitrates and humus contents. The percentage of phosphoric acid in the oven-dry soil varies from '005 to '02, and in humus it varies from '8 to '9 ; potash varies from '1 to '35 while that of lime is less than 1'0.¹ These soils are of marvellous fertility producing under irrigation splendid crops of rice, sugarcane, tobacco, and jute. The regions of these soils are heavily populated.

2. The Desert Soils

(They occur under arid and also semi-arid conditions and occupy a large tract in Rajasthan and South Punjab.) The Thar desert alone occupies an area of 400,00 sq. miles. (These soils consist mostly of sands which have been derived from old sea-coast. These soils contain high percentage of soluble salts, varying degrees of calcium carbonates and are poor in organic matter. The limiting factor being mainly water, the soils may be reclaimed if proper facilities of irrigation are available.) Very few crops specially millets, jowar and bajra are grown—for want of water supply and hence population supported by the regions is very small.

3. Saline and Alkaline Soils

(Many parts of the arid and semi-arid areas of the north specially of Bihar, U. P., Punjab and Rajasthan give rise to saline and alkaline efflorescences. It is known under various names like *Reh*, *Kallar* or *Usar*. These efflorescences are mainly salts of sodium, calcium and magnesium. (Soils impregnated with these salts are rendered infertile and hence uncultivable.) These salts are transported in solution by the Himalayan rivers, which later percolate in the sub-soils of the plains. This salt goes on accumulating in the areas of arid climate and insufficient surface drainage during the dry seasons the soluble salts are sucked up in solution by capillary action to the surface and are deposited there in the form of white efflorescence. Similarly in places under irrigation by canal waters and those in which the sub-soil water table is high as in the coastal tracts, this transference is facilitated. It is in this manner that saline and alkaline soils of the irrigated tracts of Bombay-Deccan, Madras and those near the sea-coasts and in Punjab and U. P. have originated. Such soils occupy over five million acres of land in Saharanpur, Mathura and Aligarh districts of U. P. ; in Nira Valley of Bombay,

¹ Baljit Singh, *Whither Agriculture in India*, p. 24.

Alkali lands have arisen from canal irrigation and it has been recorded that 51,000 acres have been damaged in this way. The damage is enormous, the area representing more than 25 per cent of the actual area of irrigation.¹ In the Punjab such area extends over 300 sq. miles. Similarly large land area is subject to salinity of sea water in Bengal, Gujrat, Bombay and Madras.

Saline soils (Solon chak) containing free sodium and other salts are prevalent in the drier tracts as in Western Rajasthan; whereas Alkaline soils (Solonetz) which do not contain any free salts are found in the irrigated tracts as in Bombay-Deccan. The degraded Alkaline (Solodi) soil is rarely found in India due perhaps to the presence of calcium salts in the saline soils.² The alkaline soils are deficient in calcium and nitrogen and are highly impervious. The percentage of oven-dry soil varies from .03 to .103 of nitrogen; .03 to .07 of potash; .03 to .13 of phosphoric acid and 2 to 2.0 of lime.³

4. Peaty and Marshy Soils

Peaty soils originated in humid regions as a result of an accumulation of large amounts of organic matter in the soils. They may contain considerable soluble salts. Such typical peaty saline soils (Kari) have been observed in Travancore-Cochin. The depressions formed by dried river basins and lakes in alluvial and coastal areas sometimes give rise to peculiar 'water-logged' and anaerobic conditions of the soil. The soils of these places are generally blue-coloured, due to the presence of the iron and also contain varying amounts of organic matter. Marshy soils of this type are found in coastal tracts of Orissa, in the Sundarbans and other places in Bengal, in the Central portions of North Bihar, in Almora districts of U. P. and in the South-East coast of Madras.⁴

5. Black or Regar Soils

Such soils are the products of the decomposition of lavas. These soils occupy greater part of Bombay and Saurashtra, western parts of Madhya Pradesh, Madhya Bharat, Hyderabad and districts of Bellary, Kurnool, Kuddapah, Coimbatore, Salem and Tennevelley in Madras. These soils are highly retentive of moisture and extremely compact and tenacious and rich in chemical properties.⁵ These soils are loamy to clayey in texture; vary in depth from 1 to 2 to several feet; and contain lime, Kankar and free calcium carbonates and contain heavy cracks in summer season which house the scorpions and snakes. These

1 N. P. C. Report on River Training and Irrigation, p. 51.

2 I. C. A. R. Bulletin No. 73 on All-India Soil survey Scheme (1951), pp. 15-16.

3 Baljit Singh, *Op. Cit.*, pp. 2-3.

4 All-India Soil Survey Scheme, p. 16

5 P. N. Banerji, *Indian Economics*, p. 10.

soils are endowed with inexhaustible fertility and are highly argillaceous and are useful for commercial crops, so that cultivation has been carried on for thousands of years without the use of any sort of manure. They are generally deficient in nitrogen, phosphoric acid and organic matter but potash, lime and iron are usually high. The nitrogen content is very low, .02 to .05% ; phosphoric acid .08 to .2% ; potash varies from .8 to .15 and that of lime is between 1.0 to 7.7. The kind of crops most suited to these areas is the *rabi*, but the *kharif* crops are also grown in many cases. Cotton, wheat, linseed and millets are the chief crops.

6. Red Soils (Trap Soils)

The commonest form of red soils is a sandy clay, coloured by iron peroxide. It is either derived from the rock *in situ* or from its products of decomposition worked to a lower level by rain. (The red soils comprise practically the whole of Madras, Mysore, South-east Bombay, east of Hyderabad, and a strip of tract running along the eastern part of M. P. to Chota Nagpur and Orissa.) In north, its area extends into and includes the greater part of the Santhal Parganas in Bihar, the Birbhum district of Bengal, the Mirzapur, Jhansi and Hamirpur districts of U. P., northern portion of Madhya Bharat, the Aravallies and the eastern half of Rajasthan. (The red soils differ greatly in consistency, depth and fertility. On the Uplands they are thin, poor and gravelly, sandy or stony and porous light-coloured soils on which food crops like Bajra can be grown. But on the lower plains they are rich, deep, dark-coloured fertile loam on which under irrigation can be produced excellent crops like cotton, wheat, millets and pulses.) These soils are rich in potash and lime but are poor in nitrogen and phosphoric acid. The percentage of phosphoric acid in the oven-dry soil varies from .005 to .02, in humus it varies from .08 to .09. The percentage of potash varies between .1 and .35 while that of lime is less than one.

7. Laterite or Lateritic Soils

(These soils are characterised by compact to vasicular rock composed essentially of a mixture of oxides of iron and aluminium. They are derived by the atmospheric weathering of several types of rocks under monsoon conditions of alternating dry and wet seasons.) Such soils are specially well developed on the summits of basaltic hills and plateaus of Madhya Bharat, Madhya Pradesh, Deccan, Raj Mahal, the Eastern Ghat regions of Orissa, South Bombay, Malabar and parts of Assam. (These soils vary in quality. On the higher levels, they are exceedingly thin usually of a pale colour, shallow and gravelly with little power to retain moisture and poor in nutritive substances producing millets and pulses.) But on the lower plains and

in the valleys they are dark, of finer texture, heavy loams and clays which readily retain moisture and produce good crops like cotton, wheat, millets and pulses.) These soils are deficient in potash, phosphoric acid and lime but humus is present in quantities decidedly better than in most other Indian soils. (As a building material laterite is peculiarly valuable, because it can be cut with a spade but hardens like iron on exposure to air, being resistant to further weathering it is durable.) It is also used as road-building material.

In the midst of these varying features one characteristic is found to be common to almost all soils, *viz.*, their comparative dryness. (This absence of moisture in the land makes the supply of water an absolute necessity in Indian agriculture.)

The Problem of Soil Erosion

The cutting away of the soil particles either by rain or strong wind currents is called the '*soil erosion*'. Several agents like the sun, the rain, running water, sea waves and the wind are responsible for the denudation of the land. Heavy rainfall or rain water, if it is not properly controlled has a tendency to run off the surface which percolates into the soil towards the drainage lines after washing away the most valuable and fine particles of the soil and a large part of the organic matter. Soil erosion is affected by many factors. They may be briefly discussed here.

1. *The Concentration of Rainfall.* During the rainy season when heavy rainfall beats down on the surface of the earth and loose particles of the soil, the formation of deep ravines is an established fact. The more concentrated and intensive the showers the more forcefully they shall strike the surface and the greater shall be the run-off erosion.

2. *The General Slope of the Ground.* On a steeper slope the soil is washed away much more rapidly than on gentler slope. On the steeper slopes landslips and the landslides due to percolation of water and instability of slopes owing to the gravity will be common and frequent. In places where the ground is flat, the erosion has more pronounced effects as in the peninsular parts of India particularly in M. P., and Bundelkhand than in the alluvial plains of the Ganga. In the plains owing to the flatness of the surface the fine soils are washed away without being noticed from every part of the surface of the fields.

3. *The Nature of the Soil.* It also affects soil erosion. Light open soil lose more silt than heavier loams. Heavy black cotton soils, which swell up when wetter are probably not denuded as rapidly as the lighter soils found in the peninsula. The dry tracts are also affected by the water which rushes over them. Again, the soft shale and sandstone erode more readily than limestone and

granite and hence the erosion in the Siwalik is more severe than in the Gurgaon Hills (Delhi). The silt carried by water also aids in soil erosion. By abrasion or friction it increases both the lateral and vertical erosion, *i.e.*, both on the sides and the bed stream. The greatest loss due to soil erosion occurs when the ground is bare of vegetation.

Types of Soil Erosion

The soil is chiefly eroded in two ways, *i.e.*, sheet erosion and gully erosion.

(1) In *sheet erosion* the soil is eroded as a layer from the hill slopes, sometimes slowly and insidiously and sometimes more rapidly. Such erosion is the result of the reckless felling down of the timber, over-grazing and shifting cultivation or the improper terracing of flat fields. Sheet erosion is more or less universal on all bare fallow land, on all uncultivated land whose plant cover has been thinned out by grazing, fire or other misuse ; on all sloping cultivated fields and on sloping forest and scrub jungles whose natural porosity of soil has been reduced by heavy grazing, clear felling of trees or burning.¹

(2) In *gully erosion* the water forms small rivulets which wash away the soil from gullies. First there is the main ravine and then side rivulets from lateral gullies. The phenomenon once started, and if not checked, goes on extending and ultimately the whole land is converted into a 'bad land topography'. Gully erosion is more common : (a) Where the river system has cut down into elevated plateaus so that feeders and branches carve out an intricate pattern of gullies ; (b) In relatively level country wherever large blocks of cultivation give rise to concentration of field run-off, and (c) Besides these two types there is also wind erosion which causes havoc in sandy parts of Western Rajasthan and Western U. P. leading to a great waste of cultivable land and producing nothing but sand-dunes, roads, railways and other works frequently divert natural drainage and concentrate it so that serious gullying results. In India it is common in Sivaliks, Jamuna and Chambal river basins of U. P.

Causes of Soil Erosion

What it takes nature hundreds or even thousands of years to manufacture man can and often does destroy almost overnight by haphazard land use and improvident husbandry. ⁴Jacks and Whyte have rightly remarked that "Cultivation, deforestation or destruction of natural vegetation by grazing or other means unless carried out according to certain immutable conditions imposed by each region may so accelerate denudation that soil,

¹ National Planning Committee Report : Soil Conservation & Afforestation, p. 73.

which would normally be washed or blown away in a century disappears within a year or even within a day.¹

Failures of rains, floods, depopulation and loss of cattle caused by famine and pestilence, disturbances caused by war and interference with or change in the natural drainage system have had their deleterious effect on our soils at some time or other. Soils and forests grow gradually. Even in favourable conditions a soil layer of suitable depth requires about a hundred years for natural growth and generally it takes longer. Forests cannot be created in less than thirty years. But both may be and have been lost in an incredibly short time either as a direct consequence or injudicious interference by man or indirectly from his neglect or lack of knowledge or of supervision. A hill top capped with a magnificent forest harbouring flora and fauna of inestimable economic and aesthetic value soon becomes a bare piece of rock through shifting cultivation or uncontrolled grazing or other unsound methods of land utilization. A flourishing farm if deserted soon becomes a ruin and it takes long to refashion it to its former state or productivity where this happens to be at all possible. Even frequent changes of human personnel managing it or their lack of interest have deleterious effect on the soil. Let us examine these factors in some detail.

1. Deforestation

The chief agency of soil erosion is man who helps erosion by changing the vegetative covers. But the destruction of forest covers by deliberate human interference leads to increased run-off of rain water and its diminished seepage and storage in the soil. The decomposing forest litter is no longer replenished by fresh falls of leaves or decaying roots and plant remains and the soil organic matter and other plant nutrients gradually diminish. The structure of the soil suffers; the run-off increases, loosens the soil and transports it, shifting the sand and heavier particles in the process which are deposited nearer the scene of destruction and finer particles go to make the streams turbid to be deposited far away. The increased run-off especially after heavy downpours comes in sudden rush and often gets blocked in the silted streams. The water develops power enough to cause devastating floods. Soil loss and surface run-off increase with the intensity of slope as will appear from the following table :—

Slope	Low Intensity Run-off (%)	Run-off		High Intensity Run-off (%)	Soil Loss Tons per Acre
		Soil Loss Tons per Acre			
630 ft.	13.5	5.7		20.3	32.86
315 ft.	16.5	6.35		18.0	18.26
157 ft.	28.0	7.68		10.8	8.64

¹ Jacks and Whyte, *The Rape of the Earth* ("A World Survey of Soil Erosion"), p. 20.

Forests have been ruthlessly and continuously destroyed for the supply of timber and fuel for increasing population and shifting cultivation. In a natural forest roots of the trees go deep into the soil and penetrate into the cracks and interstices of the rocks which they help to rend apart. There is also an undergrowth of bushes, shrubs, grasses and annual herbs which drop their leaves and decay to form a mat of humus which covers the soil. The force of rain is broken by the leaves of trees and this carpet of the vegetation, while surface covering of soil and the humus soak up the rain water like sponge and let it sink into ground to emerge later on in springs and streams. When rain falls gently the whole is absorbed, in violent storms, when the rate of precipitation is greater than the rate of absorption, the flow of storm water over the surface of the soil is impeded by the soil covering and the violence of the floods in the streams is lessened. The roots of the trees, bushes and herbage are intertwined to form a great net which binds the soil together and keeps it in place. The following table explains the effects of negation on checking soil erosion :—

Nature of cover	Loss of water	Loss of Soil in tons per Acre
1. Forest	1	1
2. Grass	27	32
3. Bareland	125	800

2. Destruction and Overgrazing of Pastures

Permanent grassy areas also afford some check in the actual erosion of the soil. A properly managed, lightly grazed pasture might form a permanent protection to the soil because it provides an efficient cover for preventing erosion and reducing run-off inasmuch as it covers the surface of the ground, protecting it from the direct impact of the falling rain drops and thus keeping the pores of the soil open and capable of receiving excessive amounts of water. But whenever there is over-grazing by cattle and more specially by goats and sheep (as has been the case in the rainier parts of India where grasslands are lushed with monsoon grass but in the hot season when the sun is fierce and the growth of grass stands still there is lack of herbage ; the teeming herbivora pushed by hunger graze the pasture base to the bone) the soil becomes uncovered as the grass over-grazed becomes worn and thin, rain-drops begin to fall directly on the soil, puddling the surface and clogging up the pores with mud, infiltration into the soil is reduced and the run-off of the water increases. All this invariably leads to a deterioration in botanical composition and an increase in the growth of weeds as well as to an increase in the area of bare ground. This over-grazing has done much harm particularly in

the western Himalayas and the foot-hills and eastern Rajasthan.¹ Addressing the First Meeting of the Crops and Soils wing under I. C. A. R. the Food Minister said, "If you choose sheep and goat, you choose erosion and wanton destruction, if you choose cattle, you serve the soil and gain prosperity."

Besides over-grazing grazers are permitted to lop trees for fodder provided that the trees are not lopped to death; but in practice the trees are lopped right to the top. Due to frequent cutting of thorn branches for fencing and lopping of trees for fodder deforestation gradually occurs and it becomes a fruitful source of soil erosion. The combination of present unrestricted grazing and browsing of local animals often accompanied by seasonal grazing of nomadic herds of buffaloes and flocks of sheep and goats, and lopping in an arid climate (western Rajasthan and the contiguous portion of Eastern Rajasthan) is more than hardy species of trees can stand and therefore it is disappearing from a landscape already devastated by erosion.²

3. Shifting Cultivation

Man's ruthless destruction of the forest for shifting cultivation has also decreased the area under forest. Shifting or jhuming cultivation is chiefly practised by the primitive tribes for raising food for them. According to this system of farming, a patch of forest is selected. Its trees and bushes are then cut and burnt down on the ground in order to clear room for a field. The ground is, then, lightly ploughed and the seed is sown broadcast and raked into the soil, at the first fall of the rains, which is immensely fertile owing to the wood ashes and accumulated humus. After two or three years' crop the soil is exhausted so that the crops are so poor as not to repay the labour of cultivation, and then another felling takes place and the first is abandoned. The woods are set on fire annually to improve and open out the grass for pasture, or to facilitate bear hunting. Such type of nomadic cultivation is known as *taungya* in Burma, *Jhum* in Assam, *Bewar*, *podu* and *dahya* in Madhya Pradesh, *Khil* in Himalayas and *Kumari* in the Western Ghats.³ All these wasteful ways of subsistence are being followed on a much larger scale in the districts of Sirohi, Mewar, Dungarpur, etc., as the forest tribes of Bhils, Todas and Meenas find it more and more difficult to live by robbery and being pent up within their own wilds are compelled to draw their food from the soil.⁴

1 H. Glover, *Soil Erosion*, pp. 8-9.

2 R. P. Singh, *Soil Erosion in Rajputana*, in *Indian Journal of Agricultural Economics*, Vol. IV, No. 2, p. 105.

3 *Imperial Gazetteer of India*, Vol. III, p. 25.

4 *Rajputana Gazetteer*, Vol. I, p. 23.

4. Faulty Methods of Cultivation

Faulty methods of cultivation and ploughing of unstable slopes have resulted in millions of tons of the most fertile soil of India being carried down the rivers and deposited uselessly in the sea.¹ When the virgin land is ploughed and naked soil is exposed to the rain the loss of the fertile soil of the fields is enormous, particularly on the steeper slopes, and the crops produced grow poorer and poorer in each succeeding year until the land soon becomes unculturable and is left fallow. The potato cultivation in Himalayas and the Nilgiris, where the rows run straight up and down hill, cause an abnormal rapid loss of soil; elsewhere the fields are ploughed without regard of the prevailing slope and the soil is lost which might have been preserved by ploughing along the contours.

Only the better and more easily manured fields near the villages particularly the rice fields are properly terraced and levelled and represent the results of many years of unremitting toil. But where the cultivated fields are neither terraced nor have embankment the soil erosion is immense, so that the rain falling on the unprotected soil pours down the slopes gathering speed as it proceeds until it sweeps away the soil from the terraced fields below. Huge weirs, broken bunds and ruined fields in the Rawalpindi division of the Punjab bear witness both to the industry of individual zamindars and to the failure of their neighbours to act in co-operation with them and terrace every field within the catchment area.

Thus, the Planning Commission includes "among the causes of erosion destruction of forests, unregulated grazing by cattle, sheep and goats and the consequent depletion of the vegetation cover, intensive felling to obtain supplies of fuel and timber, and the clearance of forests for extension of cultivation. It has been estimated that 2% of the surface soil is lost every year through soil erosion."

Seriousness of Soil Erosion in India

India's fertility, unfortunately, is slipping away from her. Soil erosion is the greatest single menace facing Indian agriculture to-day. Examples pertaining to such state of affairs are not far to seek. Recent investigations have shown that in the bare fallow fields in the foothills of the Northern India (except properly levelled rice land) a single storm leads to the loss of soil at the rate of 14 tons per acre; while in the Bombay-Deccan there is a loss of 133 tons of soil per acre per year from a field of jowar. In Bombay survey of 50,000 acres carried out at 28 centres showed that 17 to 23% of the area is not affected by erosion, while over

1 H. Glover, *Op. Cit.*, p. 13.

60 % is affected to such an extent that only 9" of the soil is left.¹ In the face of rapid scouring of the soil, the improvement of soil, the improvement of crop varieties or introduction of chemicals are more or less a drop in the bucket of productivity. Such scouring is specially acute in India along the Himalayan foothills and sloping grounds throughout northern India, in parts of Madras, the Bombay Deccan and the other States including Madhya Pradesh, Chota Nagpur plateau and Madhya Bharat.

There are no statistics of the extent of the area which is affected by the soil erosion but at a very low estimate according to Sir Harold Glover, soil erosion is seriously lowering the productivity of 150 million acres.² It has been estimated that the amount of soil lost by erosion ranges from 1 to 115 tons per acre in different parts of India.³ It has been further held that every year 1/20 of an inch of the top fertile soil is washed away by the rains in India.⁴

Along most of the bigger rivers soil erosion has led to the formation of a vast and intricate network of fissures and gullies and the loss of invaluable agricultural land so that soil erosion is responsible for 8 million acres of ravine lands in the Uttar Pradesh for the man-made desert between Rajasthan and U. P., which is now intruding its thirsty tongue into the south-western districts and for partial filling of the reservoirs and choking of irrigation course in the Punjab and U. P.

Without the co-operation of the Village Panchayats in the control of grazing and improvement of natural grasslands, many fertile lands in India would share the fate of the *brajbhumi*, once flowing with milk and honey but now stripped entirely of its vegetative covering, a cattle made desert extending over several hundreds of square miles in the heart of the world's most fertile plain.⁵ In fact the villages which were once surrounded by valuable fertile fields now lie in a network of useless gullies⁶ carved out of the soft mud of the Jamuna river by uncontrolled drainage with the result that thousands of acres of good cultivable land have been and are annually lost to cultivation.

Less striking but even more serious losses of soil have taken place by the actions of floods in the Chambal and other rivers flowing through Gwalior, Madhya Bharat and Madhya Pradesh.

1 S. Thirumalai, *Post-war Agricultural Problems and Policies in India*, 1954, p. 166.

2 H. Glover, *Op. Cit.*, p. 4.

3 J. Russel, *Report on the Work of Imperial Council of Agricultural Research*, p. 68.

4 *The Villager's Guide Calendar*, 1941, p. 132.

5 *N. P. C. Report on "Population"*, pp. 54-55.

6 A. Howard and L. G. Howard, *Development of Indian Agriculture*, p. 13.

The intensity of gully erosion can best be judged from the fact that in the Jamuna-Chambal basin the amount of soil eroded is estimated to be equivalent to the removal of 12 cusecs or $\frac{1}{2}$ ton of soil per second day and night without stopping for the last 1000 years.¹ The damage caused to the soil by ravines can be comprehended by the examples of extensive wastelands in Agra, Mathura and Etawah districts. The ravines of Jamuna and Chambal river form almost a compact mass with extreme length of 70 miles and breadth of 13 miles in the Centre. In Etawah alone there are about 120,000 acres of ravine land.

The Himalayan rivers, which had built up the upper plains of the Gangetic Valley, have cut deep channels in the plains which they originally formed, and actually erode gradually but continuously carry away the silt which they once laid on them. Not only this but at each bend the concave bank is being eroded, while opposite shore receives a new alluvial deposit to fill up the void left by the receding river.

The wastage in the Etawah district as a whole has been estimated to be not less than 11 cubic feet of soil per second, equivalent to a steady outflow of earth in stream 13 feet wide and 2 feet deep flowing at the rate of 3 miles per hour. It has been ascertained that the process of erosion and ravine formation commenced within the last 400 years.² It is in the Chambal-Jamuna tract that the tangle of wild and sterile ravines sloping from the uplands to the river bank shows its worst features. As far as can be seen one meets here a labyrinth of rugged ravines and green valleys covered with acacia jungle, every prominent bluff showing the ruins of some robber stronghold. This has been for centuries a no-man's-land occupied by wild Rajput tribes, robbers and raiders by profession, who settled on the flank of the Imperial highway through the Doab and were a thorn in the side of the Mussalman administration.³ It has been estimated that the total area of such desert-like and inhospitable ravines in U. P. alone is between half a million and a million acres.

Similarly the barren and uncultivated areas in Oudh contain many large trees whose roots are entirely laid bare by unchecked sheet erosion, and more than a foot of the soil has been carried away in the course of about 200 years.⁴ Other cases of the same kind abound in Fatehpur Sikri, and tahsil of Agra, as also in many parts of Bundelkhand.

¹ Dr. Thair Rizvi, *Presidential Address* of the section Geography and Geology to the Indian Science Congress, 1941.

² R. K. Mukerjee, *Broken Balance of Population, Land & Water in India* *Journal of Economics*, 17th Conference, No. 1934, p. 255.

³ Crooke, *North-Western Province of India*, p. 26.

⁴ S. L. Agarwal, *Soil Erosion in U. P.* in *I. J. of Economics*, Vol. XII, p. 78 (July 1930).

Along the banks of Chambal in the districts of Dholpur, Karauli and Kotah one finds thousands of acres devastated by soil erosion. There is a ravine land adjoining most of the Indian rivers but the Chambal is the worst offender in this respect. Many thousands of miles of cultivable lands have been destroyed and the ravines continue to cut back into plateau cultivation. Mr. A. P. F. Hamilton has correctly described the unreclaimed country along the lower course of the river (Gwalior State) as a sea of brown ridges and troughs with a few browsed relics of the desert species.¹

In this territory land has been "hopelessly cut up into winding and tortuous ravines some of which are so big that they can hide whole armies. That they actually shelter gangs of intrepid dacoits is an undoubted fact. Far from being suitable for cultivation the land dessicated and barren is hardly fit even for pasture. These ravines are the most glaring and tell-tale example of the gully type of soil erosion and havoc wrought by it.² The absence of protective vegetation and the flow of water from the high plateau to the river has caused this complicated network of ravines.

Gully erosion is also noticeable in the rolling uplands of Burdwan division. In many places the accumulated top soil has been washed away and the subsoil exposed due to sheet washing. In the Lower Bengal bank erosion is serious along all the major rivers and the loss affects urban areas as well as cultivable ground to an alarming extent.

In Behar also both sheet and gully erosion do immense damage, the main cause being uncontrolled grazing and faulty field cultivation.

In Bombay the dry areas with less than 40 inches of rain run off. Measurements taken for black cotton soil cultivation at Sholapur confirm the loss of 133 tons of soil per annum from well-tilled field.

Even in great alluvial plains of India where at first sight the ground seems to be perfectly flat damage is considerable. The land surface near the Jamuna and its tributaries provides the ideal conditions for "gully erosion". In consequence of these conditions Jamuna basin provides one of the finest examples of gully or ravine formation in the world. The banks of Jamuna and its tributaries are now so completely drained that the greater part of the areas has become almost destitute of vegetation.³ The left bank of

1 A. Hamilton, *Chambal Ravine Reclamation Schemes* in *Indian Forester*, Vol. 73, No. 3, p. 99.

2 Chaturvedi, *Economic Survey in Kotah Village*, p. 52.

3 D. L. Shah, *Prevention of the Extension of Erosion in Ravine Lands in Agriculture & Livestock in India*, Vol. IX, Pt. V.

Jamuna has lost vast areas of land owing to the formation of the mischievous network of ravines which produce little more than a crop of grass during the rainy season.

In northern India vast expanses of deep alluvial soil of exceptional fertility have been converted into valueless ravines. These ravines cut backwards into the arable fields and have already destroyed hundreds of thousands of acres of very fertile cultivated land and are extending daily.¹ In the Siwaliks and the outer Himalayas the ravines are hundreds of feet in depth and it is by no means uncommon to see abandoned homesteads poised on the edge of a chasm where a farm or a village once existed.²

With increasing soil erosion the area gets drier and drier and as the wind breaks the trees, hedges and grass cover vanish the area becomes more liable to dust and storms. Wind erosion is generally found in the desert area of the Punjab, Jodhpur, Bikaner, Kotah, Jaipur and Bharatpur divisions of Rajasthan.

In the dessicated area of Rajasthan the wind erosion has removed as much as six crores of maunds of soil per square mile in certain places during the last hundred years. The hot dry winds sweeping across these deserts or semi-deserts dry out even the meagre rainfall which they receive. At Jodhpur which gets about 13% of rain the surface evaporation is about 7½ per year, a terrible state in an area of scanty rainfall.³

According to Wad there is always an encroachment of wind-borne sand on the arable lands of Rajputana as well as a sorting out of finer particulars by wind from field surfaces leaving the soil less retentive of moisture and its surface poorer in plant food.⁴ In many instances this blown sand has been deposited in transverse valleys amongst the hill ranges and seems to encroach slowly over the entire land. Many a farmstead has been absorbed in an advancing tide of wind-blown sand. Crops in many parts of western Rajasthan are frequently damaged by sand storms. Major Erskine writes about Bikaner that high winds often cover the sown fields with a layer of sand and thus prevent the germination of the seed or by carrying away the light soil, leave the young plants exposed and cause them to wither up⁵ and on grassland areas the superior grasses are frequently choked or burnt up by hot dust-laden winds, smother nearby vegetation, bury fences and block road and railways.⁶

1 H. Glover, *Op. Cit.*, p. 6.

2 H. Glover, *Op. Cit.*, p. 16.

3 *Indian Information*, Vol. XIV (1943), No. 36.

4 Y. D. Wad, *Soil Erosion & its Control in Central India & in Rajputana in Agriculture and Livestock in India*, Vol. IX, Pt. V, p. 575-7.

5 Erskine, *Rajputana Gazetteer*, Vol. I, p. 342.

6 R. P. Singh, *Op. Cit.*, p. 102-103.

The conditions of the engines of the trains which come from the desert tract is well described by Webb in these words : "The engine which came through from the desert beyond was patterned, on the windward side of its long boiler-casing with clinging tawny sand."¹

As a result of the disturbance of the delicate ecological balance of flora and fauna by over-grazing or other misuse in many portions of western Rajasthan the advancing dunes, (which are here known as 'Tibbas') no longer bound by the peculiarly adapted vegetation, threaten the people living in Kishangarh and Western Jaipur States.² Here the sand is blown from the north-western district of the Jodhpur State. Similarly in the Jodhpur State, "Land is being out of action progressively and the same cause is behind the dust content of the storms experienced during hot weather of the last three years."³

Interesting and reliable evidence of the pace of desiccation in the Punjab has been furnished by Major W. Wright of the Survey of India. According to him the desert conditions are steadily advancing north-eastward out of Sind and Rajasthan in the direction of two great cities of Lahore and Delhi at the rate of half a mile.

In the desert fringes of the southern districts extending from Delhi to the Indus and beyond there is a belt of low rainfall where the average is from 5 to 12 inches. Not only is the rainfall very low but is exceedingly erratic ranging from nothing at all in one year to floods in the next. In the east these conditions are found in Hissar, Gurgaon and Ferozepore and in the states of Faridkot and Bikaner, in the west which now falls in Pakistan in the districts of Montgomery, Multan, Muzaffargarh, Jhang, Shahpur and Mianwali : beyond the Indus similar conditions are confined to Dera Gazi Khan and Ismail Khan (N.-W. F. P.), all in Pakistan. Even the low and erratic rainfall of these areas adds appreciably to the damage initially caused by wind erosion. North of the desert fringe are to be found large expanses of unirrigated plain and slightly rolling uplands with considerably better rainfall of about 18 to 25" (such are the districts of Jullundur, Ambala, Karnal, Rohtak in the east and in the west the enormous stretch of uplands flanking the Jhelum Salt Range and extending through the districts of Gujarat, Jhelum, Rawalpindi and Attock). In this zone the movement of sand is more localised but is still a serious handicap for agriculture. The sand is usually derived from the nearest open torrent bed where soil eroded rainwater from the neighbouring uplands has been dumped and another source is the main river channels. From both these sources the sand is whip-

1 A. W. T. Webb, *These Ten Years*, p. 50.

2 *Jaipur State Five Year Plan*, p. 30.

3 *Stamp Committee Report*, p. vi.

ped up by the hot summer winds and carried considerable distance, e.g., according to Maclagan Gorrie sand from the Markanda torrent bed in the plains of Ambala district has practically buried villages two miles from the east bank.

Effects of Soil Erosion

Soil washed from the hillslopes, fallow lands and pastures to fill reservoirs clog irrigation courses and stream channels. Agriculture, irrigation and navigation are all affected. The denudation of the Himalayan slopes, the undue increase of cultivation on the hill sides and the seasonal concentration of migrant flocks along the travel routes leading to the meadows of the upper ranges have brought about unmeasured loss of soil and water. In the Punjab, soil erosion has increased the load of silt derived from the Jammu and Gujarat foothill which is carried by the Jhelum river. The increase of the run-off and loss of soil in the less, adequately covered hill slopes of the Tehri-Garhwal region will similarly result in the partial filling in of the reservoirs of the clogging for irrigation ditches before long.¹

1. Heavy Floods in the River

In India as the population has increased the plough and the axe have ascended the hillsides, the destruction of the forests in the catchment areas of the rivers and their tributaries has caused rapid run-off and erosion leading to the deposit of an increasing mass of debris on river beds in low lands thus increasing the damage from floods. The Goghra, the Kosi, the Sone and the Swarnarekha, the Ajaija, and Damodar, Tista, Padma and the Brahmaputra, the Mahanadi and the Godavari all bring floods which are in large measure due to deforestation in the hills. The increasing severity and frequency of floods in recent years, in Bihar, Assam, Orissa and Bengal, U. P., Pepsu, Punjab, Delhi and Kashmir are due to man's invasion of the cradle of streams and trees. A great deal of soil belonging legitimately to the territories is now at the bottom of the Bay of Bengal. The evil of the extension of the ravine lands is not confined to U. P. and the Punjab alone but extends to the Bengal and Sind Delta where the removal of soils of whole valleys by denudation has led to the silting up of the river beds and the meandering rivers. The reclamation of swamps in Oudh, the eastern districts of U. P., Northern Bihar and Assam has also forced on exceedingly heavy run-off. It is estimated that the Ganges now carries to the sea eight times the quantity of silt carried by the Mississippi, and that from catchment area only than one-third the size while the Yellow river of China washes soil at the rate of 2500 million tons per annum from the now barren upland.²

¹ *National Planning Committee Report on "Population,"* p. 55.

² *U. P. Flood Commission Report.*

The following table gives the details of floods and damages done by them.
Details of damages by floods in various States during 1956

States	Rivers affected	Area affected (sq. miles)	Population affected	Approximate value of houses collapsed and damaged (Rs.)	Value of cattle lost (Rs.)	Average of crops affected	Approximate value of crops affected (Rs.)
1	2	3	4	5	6	7	8
Andhra	Brahmaputra	5,365	2,40,000	2,05,500	...	1,25,000	21,40,000
Assam	Barka	2,313	5,55,387	Not estimated	1,30,839	2,08,992	3,09,78,254
	Kopili						
	Manas, or.						
Bihar	Ganga	4,133	31,19,909	51,13,260	13,800	9,85,794	5,22,06,051
	Bagmati						
	Burhigandak						
	Gandak						
	Kasi						
Bombay	Bhima	...	15,33,746	95,73,711	...	4,53,176	38.2
	Tapti etc.	...	4.0	15,00,000	...	60,000	13.7
Saurashtra*	...	...	1,01,570	2,50,000	...	14,490	3,60,100
Delhi	Jamuna	30	2,18,529	Not available	...	3,408	2,600
Kerala	...	88					
Madhya Pradesh	...	143	...	...	...	...	...
Madras	Cuddar	13	1,755	35,005	...	3,497	47,540
	Palar						
	Kannar						
	Pennar						
	Kauvery &						
	Gulcroon						

Details of damages by floods in various States during 1956—(Contd.)

State	Rivers affected	Area affected (Sq. miles)	Population affected	Approximate value of houses collapsed and damaged (Rs.)	Value of cattle lost (Rs.)	Average value of crops affected	Approximate value of crops affected (Rs.)
1	2	3	4	5	6	7	8
Orissa	Mahanadi Brahmani Baitarni, etc.	1,260	8,50,000	9,29,100	51,618	2,22,263	2,14,87,590
Punjab	...	530	0.63 lakhs	75,000	...	574	10,000
Rajasthan	...	...	...	...	...	...	...
Tripura	Gumti Manu Khowal Dhelai Munuri Housah & Katakhal	125	1,06,900	41,900	1,450	10,346	13,02,925
Uttar Pradesh	Ganges	9,611	85.5 lakhs	660 lakhs	...	...	2148 lakhs
West Bengal	Jumuna Ghagra, etc. Bhagirati	10,220	9.2 lakhs	Not available	Not available	9,99,200	7,42,87,000
	Ganges Hooghly, etc.						
Total		33,890	1,63,84,362	8,37,24,476	1,97,707	30,8,7815	40,36,15,560

* Information is incomplete and is based upon figures given by the States directly to the Central Water and Power Commission.

2. Lowering of Sub-Soil Water Level

As a result of torrential rainfall the water rushes violently along the drainage lines without being soaked by the soil which has resulted in lowering of the sub-soil water level so that water level of the wells has gone down causing hardships and inconveniences to the agriculturists in numberless ways. Water level has thus increased in the Hoshiarpur and Jullundur districts of the Punjab and in the Etawah, Agra, Mathura and Jalaun districts of Uttar Pradesh.

3. Water-logging and Decrease in the Crop Yields

Again, waterlogging is often associated with erosion which causes a great loss to the available nitrogen and destruction of the prosperity of the sub-soil resulting in the low yield and poor quality of the produce.

4. Other harmful effects

The soil erosion leads to abandoned regions, run down communities and wandering agriculturists. The evils that have been enumerated above are not the creation of one year or a few years but of decades and, therefore, soil erosion has been justifiably called the "Creeping Death"¹ Its effects are not confined to the land but man suffers as well.

In wind erosion the larger soil particles have a cutting effect on tender plants. On grassland areas the superior grasses are frequently burnt up by the hot dust-laden winds. The effect of sand drifting and blowing on the inhabitants of these tracts is extremely depressing and demoralising. The tracts seriously affected by these present a desolate sight inasmuch as such soil has been blown away from the fields and the scanty water supplies choked in many cases.

Thus, the combined effects of the various phases of sheet erosion, gully and bank erosion, and wind erosion, can be summarised as follows² :—

- (1) Increasingly severe and sudden floods.
- (2) Longer intervening periods of drought affecting canal efficiency.
- (3) Failure of underground supplies affecting water-table level, wells and springs leading to uncertainty of irrigation supplies.

¹ H. Glover, *Op. Cit.*, p. 4.

² *National Planning Committee Report on 'Soil Conservation and Afforestation'*, pp. 74-75.

(4) Raising of river beds by sand deposit leading to catastrophic changes in river courses and blocking of navigable channels and harbours.

(5) Reduced crop yields from eroded crop fields owing to loss of top-soil.

(6) Reduced areas of cultivation due to gullying and bank erosion.

Conservation of Soil Resources

To check the soil erosion and to regain the lost fertility a fight must be put up against the forces of nature and against the activities of human beings. Sir John Russel has suggested the following remedies :—

- (a) Afforestation of the top slopes and the catchment areas.
- (b) Putting the upper slopes into grass.
- (c) Ploughing along the contour lines instead of across them, and
- (d) Bunding or terracing.
- (e) Proper land use and soil conservation practices.

The Planning Commission observes, "Soil conservation measures such as contour-cultivation, strip cropping, mulch farming, bunding, terracing, gully plugging and check-damming can do much to arrest deterioration of land".¹

1. Creation of Protective Surface

If all the rain water were absorbed by the ground upon which it falls soil erosion would be reduced to a minimum. Hence, a protective surface may be created mainly by afforestation and controlled grazing. The National Planning Committee suggests that a minimum of about 20 per cent of the land area should be covered by forests. While the Forest Policy Resolution of 12th May, 1952 has recommended that at least $\frac{1}{3}$ of the total area should be devoted to forests. But this does not obtain in many States excepting Madhya Pradesh and Assam. Even the existing forests are ill distributed and are not easily accessible in many cases. Hence, they should be more evenly and uniformly distributed over entire land. Village or minor forests should be established to secure this uniform distribution. Trees of economic importance for fuel, fodder and timber should be similarly planted wherever possible.

This will certainly conduce to a diminution in floods and soil erosion losses, a more even supplying of water in streams and rivers, conservation of moisture in soil and colder summer temperatures.

¹ *Second Five Year Plan*, 1956, p. 307.

² *N. P. C's Report, Op. Cit.*, p. 30-48.

2. Control of Grazing

Control of grazing is also necessary. For this purpose the forests may be opened to grazing by rotation after a period of 3 to 5 years and in certain seasons along with a proper classification of cattle for purposes of levy of differential or favoured rates and exclusion of others like goats which cause damage.

3. Control of Water or Flood Control

'Flood control' includes the construction of embankments, other measures of soil conservation, raising the level of the low lying villages, the construction of town protection works and dams, the establishment of a flood forecasting and warning system to inform people in time of the threat of floods.

Every small catchment of even 2 or 3 acres of hilly land should be used as a trap for water so that whatever escapes from it is guided by means of *diversion ditches* into the fields on either side of the natural drainage channel. If these small catchments are already so eroded that the water rushes down in an uncontrollable flood the use of small check dams at frequent intervals will help to reduce the force of water. At a suitable point in the channel where a slightly larger check dam or bund can be built the water is caught and led out through a masonry or spillway and from these onwards round the hillside in a ditch which must be graded so as to give a slight fall and ensure the passage of this water out into the fields.

On the plains bunding at small distances across the sloping fields is preferable to bunding at the bottom of the fields. By creating 'bunds' along the contours the rapid flow of water is prevented and time is allowed for water to soak into the soil. Such bunding prevents the loss of fine surface soil, increasing the moisture absorbing capacity of the land and increases the yield of crops.

The nature of the relief operations to be undertaken in the areas affected by floods may be divided into three groups :

1. *The preparatory stage* (before the floods). The system of warning is worth considering and a plan must be prepared to warn the usually affected area before hand.

2. *Relief operations* (during the floods). Evacuation is an important problem and for this purpose the co-operation of village organisations, and other human resources should be mobilised.

3. *Rehabilitation* (after the floods). This should deal with the rehabilitation, sanitation and public health activities.

4. Bench Terracing

What has been written above applies to the gentle slopes on which it is possible for a reasonable amount of labour to make each field into a saucer which will hold comfortably all the rain which is likely to fall upon it. But in the higher hills (as in the Himalayas and in the other ranges of Central and South India) it is not economically feasible to do this. Whenever there are old-established settlements on hilly land, some form of bench terrace (or strip cultivation) has been evolved to check the loss of soil. The best example of complete bench terracing is seen in the hill rice cultivation, where the ruling factor is the retention of water for long periods in each field.

Where a fairly broad field is wanted stone terrace walls are essential but where a narrower field will serve the terrace walls can be built up of turf or grassy band which if properly maintained, is much more absorbent than the stone wall. With good turf banks maintained without bulges and with the ploughed land properly levelled between them, such land is not likely to develop gullies because there is little run-off.

Measures that should be taken to repair and prevent the damage done by erosion may be classified under five heads :—

(a) *Economic*. (1) Removal of whole village precariously perched on ravine tops or seriously threatened by gullies. All hamlets situated in badly eroded or threatened areas should be moved in an orderly manner to new lands, for the prevention of fresh destruction of cultivated areas and village sites in and around the critical slopes, (2) plantation of village groves in the interior that will relieve the pressure of grazing in the eroded areas, (3) provision of wells and tanks that will also remove the need for concentration of human and livestock populations.

(b) *Agricultural*. (1) Prohibition of cultivation at and around the gully fingers and on steep and fairly steep slopes, (2) Terracing of the slopes ploughing and planting along contours, (3) Strip cropping on moderately steep slopes, (4) Cultivation of soil binding crops and fodder plants like small peas, jowar, bajra, gram and other legumes, clover, guar, alfafa, burscam and various leguminous fodder ; and exclusion of erosion-inducing and soil-depleting crops such as tobacco, cotton, maize, arhar, potatoes, etc., (5) planting of wind break, (6) introduction of mixed farming.

(c) *Veterinary*. (1) Closure of badly eroded areas to grazing by cattle, sheep and goats, (2) Improvement and regulated grazing of pastures, (3) Complete prohibition of goat keeping, (4) Reduction or removal of the livestock population.

(d) *Mechanical*. Construction of terraces, bunds, contour trenches and discharge channel ways. Various kinds of heavy earth-moving machinery such as bulldozer, tractors, tanks, terracers and subsoilers may be utilized for easy and quick reclamation of large areas of ravine territory and in this connection mechanical units that have been demobilized could be utilized as is proposed recently by the Punjab Government.

(e) *Sylvicultural*. (1) Establishment of forest reserves and reafforestation of eroded or threatened areas, the trees being selected with reference to their quick growth, value as fuel and timber and rate of evaporation from leaves. (2) Establishment and improvement of defensive grass plantation in threatened areas, the grasses being selected with reference to their quick growth under dry conditions, edibility for cattle and soil-stabilizing qualities.

Soil Conservation Programme of the Government

The Planning Commission has estimated that of a total land area of 800 million acres in India, approximately 200 million acres are estimated to be exposed to the ravages of wind and water erosion. Of the agricultural lands covering 300 million acres, a third is estimated to be slopy and vulnerable to erosion, when the land is bare of vegetation for a part of the year. The hill regions, pastures, waste lands and ravines, including catchment areas of river valley projects, extend to about 250 million acres, of which 50 million acres require attention. Among desert land, which account for 50 million acres, 5 million acres need to be afforested and the rest treated with such conservation measures as closure, improvement of pasture lands and rotational grazing.

The Planning Commission, therefore, suggested the creation of a Central Land Utilisation and Soil Conservation Organisation at the Centre and State Land Utilisation and Soil Conservation Boards in the States. The Central Organisation is to be entrusted with the following works :

1. To assess the exact nature of the soil erosion problem in the country on the basis of reconnaissance surveys.
2. To frame a common policy for the control of soil erosion and for soil conservation in the country.
3. To help the State Governments in drafting suitable legislation for soil conservation.
4. To bring together the State Governments with a view to evolve an agreed programme of action on problems like soil

conservation in river project areas and checking the advance of the Rajasthan Desert, organising research and demonstration.

5. To run the Soil Conservation Research branch at the Forest Research Institute, Dehradun, and the Desert Research Station at Jodhpur.

6. To organise publicity, and training of personnel for soil conservation work.

The State Boards are to be entrusted with the following works :

1. Assessment of the soil erosion problem in the State.
2. Preparation of the plans for control of erosion and soil conservation in the state.
3. Drawing up suitable legislation for land-use improvement and soil conservation programmes.
4. Execution of plans such as the construction of bunds, terraces and other works.
5. Framing a suitable programme for demonstration and research, publicity and training of personnel.
6. Supervision and control of soil conservation associations.

In pursuance of the recommendations of the P. C., a Central Soil Conservation Board was constituted by the Central Government in December, 1953 with the above functions. In the States so far 22 Soil Conservation Boards have been established.

In the First Five Year Plan period a sum of Rs. 2 crores was earmarked for providing Central assistance for these schemes. This provision was reduced to Rs. 1 crores as no expenditure was incurred in the first three years. Till April 1955, the Central Board had recommended loans totalling Rs. 29.6 lakhs and a grant-in-aid of Rs. 4.33 lakhs for various approved schemes of the State Governments. About 250 agricultural and forest officials have been trained in soil conservation methods. Eleven Pilot Projects have been taken up in the States of Bombay, Andhra, Orissa, Bengal, Madras, Punjab, Saurashtra, T. C., Ajmer, Cochin and Manipur to demonstrate soil conservation practices under expert guidance.

Schemes under the soil conservation plan for 1954-56 fell under three heads. In the first category, were schemes aiming at immobilising deserts. Secondly, there were measures for bunding and terracing on agricultural lands. Thirdly, to afforest ravines

and badly eroded lands. To achieve these objectives, the Centre has already sanctioned loans and subsidies amounting to about Rs. 130 lakhs to the State Governments. It is expected that, by the end of 1955-56, 3 lakh acres of land will have been treated for conservation purposes, giving employment to nearly 7 lakh persons. The expenditure on the schemes is estimated at Rs. 3.5 crores.

Under the Second Plan

The soil conservation programme for the Second Five Year Plan period covers further survey, research, training and extension of the service, and technical and financial assistance from the Centre to the States. The basic plan is to organise all soil conservation work on a regional basis, with regional research, demonstration and training centres in all major regions. In this period, it is planned to survey 7 million acres, of which 3 million acres would be put to suitable form of soil conservation. About 4,000 administrative, clerical and technical personnel and 2.4 million skilled and unskilled workers, it is estimated, will be required for this work. For the Second Plan Rs. 20 crores have been provided for soil conservation.

The Second Plan is a part of a Thirty Year Plan which has for its objective, the treatment of 200 million acres of land with soil conservation measures. Targets for each successive Five Year Plan are progressively higher :

11.5 million acres by 1966	
20.0	„ 1971
40.0	„ 1976
60.0	„ 1981
70.0	„ 1986

The total cost is estimated at Rs. 1,200 crores. Apart from this programme, the Central Soil Conservation Board has set up seven regional research-cum-training centres in soil conservation (1) in Mysore at Bellary; (2) in Bihar at Hazaribagh; (3) in Rajasthan at Kotah; (4) in Gujrat at Vasad (5) in Rajasthan at Jodhpur (6) in U. P. at Dehradun and (7) in Madras at Ootacamand. Some States have also established research stations such as at Sholapur in Bombay, Sahibnagar in Hyderabad, Rehmankhara in U. P. and Rajgangpur in Orissa.

Under the Second Plan, measures to arrest deterioration of agricultural land due to soil erosion, are to be taken over about 2 million acres; and about 350,000 acres of land will be controlled by creation of nucleus centres for the spread of vegetation, the introduction of improved dry farming practices, and improvement

of pastures, etc. Afforestation, contour bunding, and contour cultivation, strip cropping and water dams and bench terraces will be undertaken over about an area of 330,000 acres in the river valleys. In about 170,000 acres of hilly regions and 1,50,000 acres of ravine lands, and 100,000 acres of waste lands, soil conservation measures are also to be undertaken.¹

Flood Control

River Commissions have been set up for the Ganga and the Brahmaputra and for rivers in the north-west and in Central India for working out flood control schemes for different river basins. Flood Control Board at the Centre and in the States of Andhra, Assam, Bihar, Jammu and Kashmir, Orissa, Pepsu, U. P. Punjab and West Bengal and a Flood Wing in the Central Water and Power Commission were created in 1954, to draw up a co-ordinated flood control programme and to consider projects proposed by the States. A tentative programme of works to be carried out during the first plan was prepared and a provision of Rs. 16.5 crores was made. A total amount of Rs. 8 crores is likely to have been spent during the first plan.

The programme of Flood Control has been divided by the Ministry of Irrigation and Power into three phases: (i) immediate, (ii) short-term, and (iii) long-term. The first phase, extending over a period of 2 years, is to be devoted mainly to intensive investigation and collection of data. For this purpose spurs, revetments and embankments may be constructed. During the second phase, covering the next 4 or 5 years, it is proposed to undertake flood protection measures such as improvement of embankments and channels. Construction of storage reservoirs on the tributaries of certain rivers and additional embankments, wherever necessary, are envisaged in the third phase. A provision of Rs. 60 crores has been made for immediate and short-term measures.

However, the flood control scheme of the Government has not proved effective in protecting people against the heavy losses of floods. The main defects in this scheme of the Government are :—

(i) The efforts so far made is entirely inadequate. Except for preparing plans and organising the administrative work, much progress has not been made. The financial outlay (Rs. 60 crores in the Second Plan) in this work is very small.

(ii) There is a lack of adequate hydrological data which makes planning defective. The effort is sometimes wasted and the results are not commensurate with the efforts.

¹ *Second Five Year Plan*, pp. 307-309.

(iii) As yet too much emphasis is laid on the method of building embankments to fight floods. This is not a suitable method in most cases because the silt brought down by the flood gets deposited near the embankments thus constantly creating the problem of raising the embankment or removing the silt.

CHAPTER 5

SOIL EXHAUSTION AND ITS REJUVENATION

Poverty of Indian Soils

Being a land of great antiquity Indian land is producing crops for hundreds and thousands of years constantly without proper manuring and this has exhausted completely our soils of their fertility. The best indication that a soil is exhausted of its fertility can be obtained from the poor growth and less outturn. Where a fertility is thus recorded one may be sure that either the nitrogenous or the phosphatic fertiliser is required, because the potash salts are generally found sufficient in our cultivated fields.¹ A careful study of the following table will reveal that Indian soils are rich in phosphoric acid and potash but are poor in nitrogen,² particularly all rice soils.

Soil	Nitrogen	Percentage of Phosphoric Acid	Potash	Lime
1. Alluvial Soil	0.3 to 1.03	.08 to .13	.3 to .7	3 to 2.0
2. Regur Soils	.02 to .05	.08 to .20	.8 to .15	1.0 to 7.7
3. Red Crystalline Soils	.08 to .09	.005 to .02	.1 to .35	less than 1.0
4. Laterite Soil	.01 to .04	.01 to .08	.1 to .4	Do.

With every crop removed from the land, the soil is depleted of the three important plant nutrients. Nitrogen, phosphoric acid, and potash and the quantity removed varies with the kind of crop produced. The Royal Commission so rightly remarks, "The impoverishment of the soil has been due to continuous cropping."³ Here an example has been quoted from the Madras State. The approximate quantities of nutrients removed by some of the principal crops are given below⁴ :—

Name of Crop	In pounds per acre		
	Nitrogen	Phosphoric Acid	Potash
Paddy	48	23	41
Sugarcane	56	68	90
Cotton	97	29	83
Tobacco	76	9	85
Cholam	72	25	45
Ragi	49	30	202
Maize	25	10	25

¹ S. K. Mitra, *Elementary Agriculture*, p. 164.

² Baljit Singh, *Whither Agriculture in India*, pp. 23-25.

³ *Report of Royal Commission on Agriculture*, p. 76.

⁴ S. T. Krishna Swami, *Rural Problem in Madras*, 1947, p. 115.

A study of these figures would reveal that a great loss occurs every year through the loss of nutrients from the soils. What is true of Madras is also true of India as a whole.

Evidence of Soil Exhaustion

In fact it must be realised that what is taken of the land in the crops must in some way be put back into the soil or else the soil will suffer from exhaustion. Further the production of heavier crops means that more manures must be applied to land. But in India opposite is the case. Here farming has become short of marginal enterprise, "The farmer takes out of the land only the bare minimum, because he is not in a position to put back anything substantial into it." "The extra crop in England," says Dr. Voelcker, "is . . . the produce of what is added to, and not, as India . . . of what is taken out of it."¹ According to Howard also, "He does more with a little nitrogen than any farmer in the world outside China. He uses his supply of nitrogen carefully, because he lacks fund to buy manures and fertilisers that can re-endow his land with chemical elements through farming."²

In this connection, deficiency of combined nitrogen is the limiting factor throughout the greater part of India. The soil of India is not poor but has become poor. It has been suggested that the humus called the "Reserve Bank of soil" is getting depleted in our country. Examples are not wanting which may throw light on the steady deterioration of our soil resources. A few of them may be cited here. Dr. Clouston, in his evidence before the Royal Commission on Agriculture said, "Most of Indian soils had reached their maximum state of impoverishment hundreds of years ago and would not get any poorer if cropped without manures for hundreds of years more."³ After analysing the experimental data at their disposal the Agriculture Commission were of the opinion that, "a balance between the natural gains of plant food materials and those removed by crops and other losses has been established and no further deterioration is likely to take place under existing conditions of cultivation."⁴

Dr. Burns remarks that, "Indian soils are at a stage in which on the whole, there is neither increased nor decreased production. Judged from the results of over 500 manurial experiments in India and the variability in yields of no-manure plots, it is probable that in most parts of India soil fertility is stabilized at comparatively low level. There are indications that improved varieties with a

1 J. A. Voelcker, *Op. Cit.*, p. 41.

2 A. Howard, *An Agricultural Testament*, p. 210.

3 *Royal Commission Agriculture Report*, p. 76.

4 *Ibid.*

higher uptake of nutrients may depress this level further. But it is not difficult to ensure increased yield by manuring and specially by manuring with nitrogen for which the land has the greatest hunger."¹ This points out to the fact that our land is very poor in nitrogenous elements. In the following table is shown the result of experiments made over a number of unirrigated rice holdings in M. P. recorded over a period of four years.²

No. of Holdings	Area in Acres	Average Treatment per acre from 1946 to 1948-49	Average yield of paddy per acre lbs.	Increase over no manure lbs.	Per cent increase over no manure lbs.
3	62	No Manure	389	—	—
7	167	1 to 2 cartloads of farmyard manure	566	177	46
5	58	2 to 4 cartloads of farmyard manure	852	463	119
3	20	4 to 6 cartloads of farmyard manure	10,35	646	166
1	43	1 to 2 cartloads of farmyard manure 2½ mds. groundnut 10 lbs. alum-sulphate	10,78	689	177

So remarks Dr. Mookerjee, "Land is going out of cultivation. The deterioration of land has already proceeded so far that it cannot be checked, and that the tract (in question) is doomed to revert gradually into swamp and jungle."³ "The agricultural shrinkage in Central and Western Bengal has been unprecedented in its magnitude and rapidity. About half the cultivated area has ceased to be ploughed in Burdwan and Hooghly, still the area is shrinking."⁴ Dr. Burns also repeats the same tale for Bengal.

Similarly in the Punjab a considerable amount of land had gone out of cultivation and a great deal more was going out of cultivation on account of *kallar*.⁵ Again in M. P. the soils have now reached a stationary state of fertility at a low yield level as a result of cultivation of many centuries without adequate returns of organic matter and phosphate due to lack of proper soil management in certain important directions. Therefore, the problem is not one of preventing further deterioration of soil fertility but is

¹ Dr. Burns *Technical Possibilities of Agricultural Development in India*, p. 121

² R. S. Shrivalkar in *Rural India* of August 1949, p. 203.

³ R. K. Mookerjee, *India Analysed*, Vol. III, p. 196.

⁴ Quoted by R. K. Mookerjee, *Op. Cit.*, p. 197.

⁵ Dr. Lander, *Proceedings of the 2nd. Meeting of the Crops and Soils Wing of the Board of Agriculture*, p. 43.

one of finding ways of improving the soils which have more or less reached a minimum stage of fertility.¹

All these instances quoted here clearly reveal the deterioration of soils, consequently leading to declining outturn per acre as shown by the following table² :—

Crop	1936-39 (Average)	1945-46	1948-49	1951-52	1955-56
Rice	793	703	699	632	902
Wheat	618	541	573	556	828
Gram	543	463	519	423	722
Jowar	435	322	303	340	580
Maize	659	594	529	560	946

Thus the most disquieting feature of Indian soils is that not only the yields have been progressively declining from year to year but our yields are also the lowest in the world, as would be clear from the following table³ :—

Crop Yield in Bushels per Acre of a few Crops (A Bushel = 60 lbs.)

Country	Wheat	Maize	Rice	Barley
Italy	21·6	30·7	52·7	17
U. S. A.	16·2	34·0	28·2	23
Canada	22·0	49·2	...	...
Egypt	28·5	31·2	...	..
China	14·5	19·5	28·4	17
World Average	17·2	23·7	18·1	20
India	10·3	8·4	12·9	12

Sir John Boyd Orr ascribes the deterioration of land in India to the lack of humus and fertilisers and the practice of using cow-dung as fuel "characteristic of the last stages of soil exhaustion."⁴ However, 1951-52, yields have begun to rise due to the efforts under the first Plan.

Why Indian fields are not manured properly ?

The examples given above forcefully point to the fact that the Indian farmer does not apply adequate manures to his field. This is due to a number of causes :—

(1) Much of the farmyard manure available is burnt as fuel causing a great agricultural loss which as emphasized by

1 Dr. Bal, *Proceedings of the 3rd Meeting of the Crops and Soils Wing of the Board of Agriculture*.

2 *Proceedings of the 8th Meeting of Crops and Soils Wing of the Board of Agriculture*, 1952, p. 81-83.

3 D. Stamp, *Our Underdeveloped World*, 1953, p. 80-83.

4 J. Orr, *White Man's Dilemma*, 1953, p. 69.

Dr. Voelcker amounted to a waste of 29.95 lbs. out of 30 lbs. nitrogen in every ton of farmyard manure. The I. C. A. R. have calculated that the amount of cow-dung burnt is about 500 million tons, while Sir Howard puts it at 250 million tons per annum. Even taking the lower figure the loss to our agriculture can well be imagined. The fertility of the fields, thus deprived of manure, decreases. At $3\frac{1}{2}$ tons per acre per annum, the 250 million tons of cow-dung could adequately manure 72 million acres.

(2) Besides the cow-dung cakes even the rest of the cattle-dung is not properly kept and utilised for the dung is thrown away in the open on the outskirts of the villages and collected at the end of the year during the manuring season. Thus most of the valuable grasses are lost and its manuring value is reduced. Even where pits are dug for storing cattle-dung they do not have sufficient breadth and depth so that they soon get filled up and the dung lying at the mouth of the pit remains open and is scattered away by the passing of cattle and loses its manurial value. Cattle urine is not used to the full extent. Except for the little urine which inevitably gets mixed up with dung no effort is made to collect it.

(3) The use of night-soil is neglected due to social prejudices and religious susceptibilities and conservatism of the farmer. Similarly the use of bones, bonemeal and fish has been very scanty mainly due to prejudice, ignorance and lack of facilities. Green manuring too is scarcely practised by our cultivators. Artificial nitrogenous fertilisers are used only to a limited extent due to higher prices at which they are sold, inadequacy of water supply and ignorance of the cultivators. Little is known as to the most suitable time of applications of the fertiliser.

(4) Due to extreme poverty and illiteracy the cultivator is not in a position to apply best manures, though he knows fully well their utility to his land. Whatever manures he uses, are confined largely to the more profitable among cash crops as tobacco, sugarcane, vegetables, etc., and the amount of manure applied to the land on which the main crops are grown has been very small.

(5) The farmer has little information about the proportions of nitrogen, phosphorus, and potassium required by different kinds of soils and crops or the right proportions in which organic manure should be used. "As our country comprises of tropical and sub-tropical regions, the humus in our soils is being constantly burnt away by the scorching heat of the sun. The organic by-products of the crops—stalks, leaves—are utilised as cattle feed or thatching material, and are not returned to the soil except in small proportions. The bulk of the cattle-dung produced is burnt away . . . Green manuring is not possible for want of availability of water

for raising green manure crops. Poudrette is not used on account of social and religious prejudices. Thus the humus status of the soil has been steadily going down.”

Our Manurial Requirements

The aggregate requirements of nitrogenous manures are enormous. One estimate has put them at 2.6 million tons of mixed nitrogen a year.¹ It has also been estimated that even if the whole of the farmyard manure were used for manuring the land (at present only about 40% is believed to be so used) the amount of nitrogen thus made available would only be in the region of 800,000 tons, that is, about one-third of the total requirements in the form of cattle, sheep and goat-dung is returned to the soil. The rest (20%) is lost partly due to bad methods of preservation and partly due to the use of dung as fuel² (40%). It has been estimated that 20 lbs. of nitrogen per acre would be the minimum required, and the quantities in terms of different manures—organic and inorganic—for the whole of the rice area alone, would be over 2,500,000 tons of ammonium sulphate, 10 million tons as oil cakes and 100 million tons as compost.³ For all crops taken together the quantity required would be very much greater. As against this total requirement we are told that the total production of fresh dung is 800 million tons—of which only 2 to 3 million tons are left for the soil, the rest being wasted or burnt as fuel.⁴ These figures show the magnitude of the manurial problem which has to be solved, if the technological possibilities of increasing the yield of crops by means of manure are to be translated into practical possibilities.

Nature and Function of Manures

A manure is “a substance designed to supply one or more of the essential constituents of plant food and, where necessary to improve the physical condition of the soil to which it is applied.” The essential constituents of plant food must contain these elements—carbon, hydrogen, oxygen, nitrogen, phosphorus, sulphur, lime, magnesia, iron and probably silicon, chlorine and sodium. Of these carbon, hydrogen and oxygen and some of the nitrogen are derived from air and rain, most of the nitrogen and the remaining elements being obtained from the soil. Almost every soil contains enough lime, magnesia, sulphur, iron, silicon, chlorine and sodium for the growth of a full crop but nitrogen,

1 W. Buins, *Op. Cit.*, p. 122.

2 J. Russel, *Development of Agriculture and Animal Husbandry in India*, p. 7.

3 *Eighth Meeting of the Crops and Soils Wing, Op. Cit.*, p. 219.

4 *First Five Year Plan*, p. 255.

phosphorus and potash are often present in but small quantity and become exhausted by the removal of farm produce. Hence, the addition of manure is indispensable to supply the deficiencies of these three constituents in the soil. But as some crops either contain an excess of one or other of these ; or are better able to obtain some one or other of them from the soil than are other crops, it is most economical to apply a special manure to meet the needs of such crops.

All manures have a complex action in the field :—

(1) Feeding the crop, (2) altering its habit of growth, its feeding value, its qualities, market price, etc., (3) acting on the soil and affecting tilth moisture holding capacity, draft of implements, etc., (4) making the soil acid or alkaline according to the nature and circumstances of the case. Thus the manures are used in practice for the following reasons :—

- (a) To supply crops with readily available food.
- (b) To enable crops to make the most of their short-growing period by supplying available food just when most needed.
- (c) To give each crop just what it has most difficulty in getting for itself.
- (d) To keep up the original fertility of the soil.

The nitrogenous deficiency of the soils can be overcome by (a) the careful conservation and proper use of farmyard manure, (b) the manufacture of composts from village and town refuse, (c) the use of human waste, (d) animal produce, (e) oilseeds cakes, (f) the use of green manure, (g) rotation of crops, (h) mixed cropping and (i) the use of chemical fertilisers.

(a) Farmyard Manure

From the beginning the utilization of farm wastes rotted by means of the urine and dung of animals has been the principal means of replenishing soil losses. Farmyard manure is the mixture of the liquid and solid excrements of farm animals with straw used as litter. The liquid portion should be soaked by the litter so that the latter may have moisture enough to allow its decomposition.

Farmyard manure is the most important of all fertilizers as they are supposed to contain all the ingredients required for the growth of crops and also because it causes a certain amount of disintegration of the soil. In addition to its manurial properties it has valuable physical effects upon the texture and water-holding powers of the soil and in dry seasons these may count far more

than fertilizers towards ensuring good crops. It restores humus in the soil, gives cohesion to the sandy soils, and renders clayey soils more porous and workable. It serves as a buffer in the soil ensuring even distribution of (inorganic) plant nutrients to the roots of crops. It is, therefore, very essential when applying chemical fertilisers.

It is estimated that about 200 million tons of this manure are at present being applied to about 300 million acres of land under plough in our country. The relative importance of cattleshed manure as against other forms of organic and inorganic manures in the quantities at present in use in India is shown in the following table.¹—

Type of Manure	Estimated Quantity now used (in tons)	Total content of nitrogen (in tons)	Phosphoric acid (in tons)
Cattleshed manure	200 million	10 lakhs	3 lakhs 10 0
Oil Cake	1.5 million	0.75 lakhs	0.3 lakhs 0.75.
Ammonium Sulphate	250,000 tons	0.50	nil 0.5
Phosphatics	100,000 tons		0.2 lakhs 0.2
Fertilisers (including bones)			

From the above figures, it will be clear that cattleshed manure supplies nearly ten times as much nitrogen and phosphoric acid to the soil as other manures and fertilisers put together and this in spite of the fact that cattleshed manure is now prepared in a most crude and primitive manner in our villages and only half of the cattle-dung is used for manure production. It has been estimated that only 40% being burnt as fuel and 20% lost through defective methods of cultivation and preservation only 40% is used for manuring.² Dr. Acharya is of the opinion that by effecting simple improvements in the existing methods of cattleshed manure preparation, with special reference to sectional filling of trenches and cattle urine conservation, it will be possible to increase the quantity of manure prepared by nearly 50% and the amount of nitrogen contained by about 100%. By adoption of such improved methods it would be possible to add an additional 10 lakh tons of nitrogen to the soil, which will mean an increase in our food production by nearly 10 million tons per year.

The storage of farmyard manure presents considerable difficulties for when it is kept under the best conditions there will often

¹ Dr. N. C. Acharya, *Compost Production and the Grow More Food Campaign*, in *Rural India* (July 1949), p. 279.

² J. Russel, *Op. Cit.*, p. 27.

be a loss of 15% of its nitrogen and it can be as much as 40% under ordinary methods of storage. Even under the covered-yard system, when the dung and litter are left under the animal until a layer several feet thick is produced and the product is protected from the weather as much as 15% of the valuable nitrogen is lost. When the dung is carted out into a heap to ripen the losses of nitrogen are even greater.

It has been already pointed out, vast quantities of our refuse is misused mostly in our villages and farms, where they are either not systematically collected or are used for purposes other than manure preparation, *i.e.*, for burning. The following statement will give an indication of the total quantity of refuse available in our villages and the amount at present converted into manure¹ :—

Waste of Manure in our Villages
(in millions of tons per year)

	Dry matter	Nitrogen	Phosphoric Acid	Potash
(1) Total Quantity excreted by 150 million cattle in,				
Dung	133.5	1.659	0.664	0.995
Urine	26.5	3.319	0.020	4.979
Waste Litter	34.8	0.187	0.056	0.286
Total	194.8	5.165	0.740	6.260
(2) Recovered in 1200 million tons of manure prepared at present :—	120.0	0.84	0.36	6.72

It would appear from the above data that the wastes of plant food provided by the animals is greatest in the case of nitrogen and potash and this is, in main, due to the defective methods of manure preparation adopted at present in the villages which do not utilise cattle urine as much as possible.²

1 C. N. Acharya. *A Review of Compost Development during 1944-49* (Rural India, Feb. March, 1950), pp. 64-65.

2 As a result, the manure produced at present in our villages contains only about 0.5 to 0.7 per cent nitrogen; about 0.3, 0.5 and 0.6 to 0.7 per cent K. 20 (on dry basis) whereas similar manure prepared in China, Japan, Europe and America contains from 2.0 to 2.5 per cent nitrogen, about 1.0 per cent to 1.5 per cent K. 20 (on dry basis).

Russel and Richards after carrying out an elaborate investigation on the storage of farmyard manure at Rothamstead concluded that (1) the system of leaving the manure under the beasts till it is required for the fields as in the box or covered-yard system is the best whenever this is practicable, (2) the ideal method of storage is under anaerobic conditions at a temperature of 26 C, (3) the manure heap, however, well made and protected, involves loss of nitrogen and (4) the best hope of improvement lies in storing the manure in water-tight tanks or pits so made that they can be completely closed and thereby allow the attainment of perfect anaerobic conditions. Therefore, what is needed is a continuous system of preparing farmyard manure in which (1) all losses of nitrogen are avoided and (2) the various steps from the raw material to the finished product follow a definite plan based on the orderly breaking down of materials and the preparation of finished product ready for immediate nitrification which can be easily incorporated in the soil. It must be remembered that well-rotted dung is richer and more active than comparatively fresh undecomposed material and, hence, it is wasteful to turn heaps of manure to get at the well-rotted material for top dressing. Directly the heap is broken it should be used.

Hence, every effort must be made to check the practice of burning cow-dung as fuel. In this connection it is well worth noting what Royal Commission remarked, "Something can be done to promote the better preservation of farmyard manure as is not diverted to consumption as fuel, by using it as a compost with village sweepings." Sir John Russel observed thus, "Wasteful practice of making manure into cakes and burning it goes on unabated for the simple reason that no other equally useful fuel is available. . . . The only way stopping the practice is to provide an alternative supply of fuel."¹ This can be done by planting fuel trees in and around the villages in large numbers.

(b) Village and Town Refuse Compost Scheme

Schemes for manure preparation in villages are already in operation in a number of States, including East Punjab, U. P., West Bengal, Bombay, Orissa, Madras, etc. In rural areas, particularly in the C. D. Projects and N. E. Blocks composting of farmyard manure and other wasteful material is becoming increasingly popular. According to Sir Russel, "Composting of waste materials is now a recognised part of the activity both of the experimental stations and the village improvement associations, and we may expect some additions to the manurial resources of the country as a result." Modern composting is being carried on more systematically on Government farms and is said to be capable of at least trebling the heavy manure available.

The village compost scheme is working satisfactorily in the Punjab and U. P. The Punjab is adopting trenches 25 ft. in length, seven to eight feet in breadth and three feet in depth whereas in U. P. the department has pits twelve and a half feet in length, eight feet in breadth and two to three feet in depth. One trench of the Punjab dimensions would be sufficient for a household to carry the refuse all the year round whereas two to three trenches of the U. P. dimensions would be necessary for a house trench as the pits being smaller in length can be located even in congested areas. The trenches are filled up in breadth-wise sections with the material already used in the cattleshed for absorbing cattle urine. In addition to dung-waste, litter and waste of horses and poultry combined with herbage, straw, garbage, urine and other habitation wastes such as household sweepings, wood-ash and leaves, etc., are also added. No turnings are necessary, but when each section in four or five days reaches to a height of one and a half or two feet above the ground level, the top is plastered over with a paste of cattle-dung and earth (equal parts by weight) in order to conserve moisture and nitrogen and to prevent fly-breeding. The manure is then ready in four to six months' time, and a rich product containing over two per cent nitrogen (on dry basis) obtained, which would increase crop yields by 25 to 50%.¹

It is striking to note that in China everything which can be made edible serves as food for man or domestic animals, whatever cannot be eaten or worn is used for fuel. The wastes of the body, of fuel and of fabric work beyond other uses are taken back to the field ; before being taken there they are housed against waste from weather compounded with intelligence and forethought and patiently laboured with through three or even six years as feed for the crops, then there is no reason why the method of utilising the night-soil and other waste products adopted by the Chinese and the Japanese farmers should not be followed in India too.

It is further possible to increase the quantity of cattleshed manure by an additional 200 million tons by putting an end to

1 In this respect Plant Research Institute at Indore has done exceedingly well in using various wastes for compost making. Here the following materials have been utilised in making compost :—

- a. Residues which are available in large quantities : cotton stalks, sann, hemp, sugarcane trash, weeds, fallen leaves, pigeon pea stalks.
- b. Residues available in moderate quantities : mixed dried grass, gram stalks, wheat straw, uneaten decayed silage, groundnut husks and stalks and leaves damaged by rain, sugarcane and millet stumps.
- c. Residues available in small quantities : waste paper and packing materials, shaving, sawdust, torn out gunny bags, torn out uniforms and old leather belting.

the prevalent practice of burning cow-dung cakes for fuel. This could be done by supply of alternative fuel to villagers by starting village plantations consisting of quick-growing trees like *Kherja*, *Babul*, etc. For this purpose all waste lands lying in and around the village, railway sidings, farms, roadways must be utilised. Village Panchayats and Gaon Sabhas can easily help in this direction by preparing plans for systematic planting of trees for fuel each year with a view to make available the required fuel within 4 to 5 years so that the practice of cow-dung burning is progressively diminished, until the practice is ultimately abolished.

In addition to village refuse which at present forms the main bulk of manure supply to our land there is yet another untapped source of manure in *Kutchra* and night-soil of our urban centres. It is gratifying to note that the importance of human excreta and urine is being recognised as sources of nitrogen phosphorus, and organic matter. In urban areas night soil is composted with refuse. This compost is applied mainly to vegetables, potatoes, cabbages and fruit crops, and the application of 100 lakh tons of this manure, it is estimated, would increase our production of food crops by nearly one million tons per year.¹ According to Dr. Acharya application of 5 cartloads ($2\frac{1}{2}$ tons) of town compost per acre has given increased yields averaging about 2 to 3 mds. of foodgrains and 5 to 10 mds. of potatoes, vegetables, etc.

Besides the town refuse there are to be found large quantities of sewage effluent and sludge in our towns which are, at present, practically going to waste for about 90% of sewage is let in to the sea and the sludge is used for filling up low-lying areas. It has been estimated that in 30 to 40 big cities (where sewage system has been introduced) there are produced daily about 500 million gallons of sewage, which contain about 100 tons of nitrogen per day, equivalent to about 182,000 tons of ammonium sulphate valued at over Rs. 5 crores per year. Thus about 500 million gallons of sewage can irrigate about 100,000 acres and increase the food production by about 100,000 gallons. Sewage effluent contains both water and plant food and could be utilised for growing food crops. In 1955-56, the Government of India approved 9 schemes for sewage and sullage utilisation as against 17 schemes in 1953-54. These schemes are estimated to give 22 million gallons of sewage, expected to irrigate about 8,915 acres and to yield about 24,814 tons of additional production of foodgrains and vegetables.

Thus our indigenous supplies of manures which have not been utilised so far and the extra food that can be produced by

¹ C. N. Acharya, *Op. Cit.*, p. 62.

their systematic utilisation has been well summarised by Dr. C. N. Acharya in the following table¹ :—

Type of Manure	Potential Capacity (in tons)	Extra Food Production (in tons)
1. Collection of Extra refuse available in our village and farms	50 million	2 million
2. Conservation of cattle urine by absorption in earth or refuse	50 million	2 million
3. Forest planting programme and saving of cowdung from being burnt	200 million	7 million
4. Town Refuse Compost	10 million	1 million
5. Sewage and Sludge	(in million acres)	(in million acres)
6. Chemical fertilizers (500, 000 tons)	0.5 „	0.5 (vegetables, 0.2 potatoes „ 0.5 and fruits)

Total 13.2 million tons

As a result of the intensive efforts carried out during the last few years under the G. M. F. Campaign compost production has shown a rapid increase both in the urban and rural areas, as shown in the table given below² :—

Progress of Compost Development in India

Year	Quantity of compost produced		Total (Tons)
	From Town Refuse (Tons)	From Village and Farm Refuse (Tons)	
1944-45	1,82,610	2,10,000	3,92,610
1945-46	2,82,670	5,20,000	8,02,670
1946-47	4,09,360	8,29,000	12,38,360
1947-48*	4,86,080	12,58,986	17,45,066
1948-49*	7,21,257	27,65,944	34,87,201
1949-50*	12,09,089	51,67,512	63,76,701
Total	32,91,066	107,51,442	140,42,508

*These data relate to Indian Union only.

As a result of the recommendations of the Central Manure (compost) Development Committee (1948) various States including Madhya Pradesh, East Punjab, Bihar, Orissa, Bombay, Hyderabad

¹ C. N. Acharya, *Rural India* (July 1949), p. 281.

² C. N. Acharya, *Six Years of Compost Development Work in Rural India* (Jan. 1951), p. 31.

and Mysore State have passed legislation for compulsory compost making. Out of 3,000 places where Municipalities and Notified Area Committees are functioning, composting is in progress in 1,813 places. The progress made since 1950-51 is shown below¹ :—

Year	No. of urban centres	Production of compost (lakh tons)
1950-51	1,048	14.03
1951-52	1,693	16.94
1952-53	1,700	17.99
1953-54	1,729	18.55
1954-55	1,813	20.60

The potential resources of increasing compost production are very great and are of the order of 100 lakh tons of urban compost and 500 lakh tons of rural compost. If the above targets are to be achieved, it is necessary that (i) the present momentum in accelerating compost production in the urban and rural areas should be maintained by the Central and Provincial Governments concerned; (ii) suitable plans and schemes shall be framed for each area to set up the targets rapidly from year to year; (iii) necessary funds and staff should be provided for achieving the above targets and (iv) intensive compost drive should be backed by suitable legislation, in addition to propaganda and demonstration.

(c) Manure from Animal Waste

The utilisation of waste of animal origin is of the same importance as of human excreta. Like the latter, the products have come from the soil and been paid for in the manure. Unfortunately, these wastes are not collected with sufficient care, in spite of the great facility with which they can be utilised. Vast quantities of blood are annually lost in the slaughter-houses of both large and small towns. Their conversion into chemical manure is their best disinfection.

1. *Dried Blood.* The dried blood from slaughter-houses may be used as fertiliser. Recently a simple process has been used to dry blood and reduce it to a fine powder. This process consists in adding 1% to 3 per cent of quicklime, which converts it into a solid cake which may be dried in the air without purifying and finally gives a fine and inodorous powder.

1. The number of Municipalities where urban compost is made are; 126 in M. P., 97 in Madras; 241 in Bombay; 73 in Bihar; 74 in E. Punjab; 256 in U. P. 26 in Orissa; 30 in W. Bengal; 20 in Travancore and Cochin; 12 in PEPSU; 189 in Hyderabad; 63 in M. B.; 13 in Vindhya Pradesh and 103 in Mysore; 26 in Saurashtra and 19 in Rajasthan. (Vide, *Five Year Plan Progress Report* for 1953-54, p. 70, and for 1954-55, p. 70.

According to the recommendations of the Planning Commission the blood meal is being used in U. P., Bombay, Madras, West Bengal and Hyderabad. In U. P. four municipalities (Kanpur, Hapur, Gorakhpur and Lucknow) produce about 460 tons of blood meal. In Bombay State, Poona City, Poona Cantonment and Bombay city produce about 300 tons. Five municipal towns in Madras have also made arrangements for the collection and disposal of blood meal. The tea and coffee plantations of the South use this manure.¹

2. *Animal Refuse.* Horn turnings and shavings contain 13 to 15 per cent of nitrogen, so these may be used as manure. But they are generally mixed with wood shavings and other sweepings of the workshops, reducing its manurial value. Hoofs are, however, richer in nitrogen than ground horn. Hair wool, wool rags, old felt, and feathers have the same value as horn. In the pure state they contain 11 to 13 per cent of nitrogen. To serve as manure all these materials and particularly horn are reduced to a fine powder. But even when apparently dry they are so tenacious that it is impossible to grind them.

3. *Bone Meal.* Bones contain from 45 to 55% of phosphates chiefly as tricalcium phosphate and partly also in the form of magnesium phosphate. Bones containing $3\frac{1}{2}$ to $4\frac{1}{2}$ per cent of nitrogen, 3 per cent of calcium carbonate and 4 per cent of other ash (including silica) may be regarded as the light manure. Bone-meal as a manure is suitable for all types of soils, particularly acidic soils where superphosphates cannot be used. It helps to increase the phosphorus content of grain and they enhance its nutritive value.

Bones of dead animals and bone-meal are little used in the country. In the first place, because of the ignorance and the age-long prejudice of the people. Secondly, because of the absence of accurate information with regard to the use of the bones as manure in relation to different types of soil. Thirdly, there is the difficulty of collecting and keeping the bones and of pounding them to powder. Dr. Voelcker had called attention to the desirability of experimental investigations into the value of bones as manure, the Agriculture Commission repeated the same recommendation. Sir Russel observed, "Little information is available about the proportions of nitrogen, phosphorus and potassium required for different soils and crops, or the proportions in which the organic manure should be used."² Thus an important part of the fertilizers in the shape of bones and bone-meal was lost to India by a failure to apply it to the soil and by export. The

¹ John Russel, *Op. Cit.* p. 57.

² Russel, *Op. Cit.*, p. 58.

average exports of bones from India for the five year ending 1914-15 were 90,000 tons valued at Rs. 64 lakhs. For the five-year ending 1924-25, they were 87,000 tons valued at Rs. 96 lakhs. The Planning Commission observes, "The exports of bones have steadily increased and between 1884 and 1951 a total of about 4 million tons of bones have been exported."⁴

The average annual collection of bones amounts to about 150,000 tons. "This is only one-fourth of the estimated quantity available judging from the number of cattle that die in a year. At present 25% of the bones is converted into bone-meal, and the remaining 75% is exported as grist." Fortunately the export of the bone-meal is now prohibited and the whole of it is used internally as manure.

4. *Fish Manures.* The by-products of fishing are important sources of fish manure and guanos which are both nitrogenous and phosphorus in their constitution. Fish guano is simply dried fish. It contains about $1\frac{1}{2}$ per cent of nitrogen and 1 per cent phosphoric acid. It has been used with success as a manure for root and cereal crops. It is made on a considerable scale from various kinds of fish refuse like dried fish unfit for human consumption, fish guanos, the cake left after pressing the fish oil and pitted fish and often other refuse from fish-curing yards. In making guano generally oil fishes like cod, herrings, sparts, etc., are boiled and pressed for the sake of their oil and the residue is dried, powdered, and sold as fish guano. In India out of a total of 14.1 million maunds of fish production, only 1.1 million maund are converted into manure.

(d) Human Waste

The annual average supply of night-soil for the country has been estimated at 3 to 4 hundred million tons but all of it is being neglected due to caste prejudice and conservatism.

Prejudice against the use of night-soil has deterred the agriculturists in India from using to the best advantage a valuable source of combined nitrogen. Night-soil can be easily used in the form of poudrette. Another way in which night-soil can be converted into a form in which its use is less obnoxious to the cultivator is by the adoption of the activated sludge process. This process reduces sewage, by the passage of air through it, to a product which can either be used and required in the form of effluent from the sewage tanks or dried and sent where there is a demand for it. The activated sludge process is suitable only for towns which have a sewage system. It is much more expensive than conversion into poudrette but has the advantage of conserving a larger percentage of nitrogen. The P. C. recommends to devise suitable latrines in rural areas so that excreta could be collected and used as manures.

⁴ *First Five Year Plan*, p. 258.

(e) Oilseed Cakes

Oilseeds and oil-cakes are another important source of manures, particularly the latter. The export of seeds and cakes implies the removal of a considerable amount of the constituents of the soil. If the cattle in India were fed with oil-cakes, the manure would be returned to the soil, whose fertility might thus be conserved. Apart from the soil, "to send away the entire seed or the refuse after the removal of the soil, is to send away valuable manurial constituent of the soil's fertility."¹

In this country oil-cakes are generally used as cattle foods, but some of them for various reasons, are unsuitable for this purpose. These oil-cakes as well as damaged cakes are employed as fertilisers. They have been applied considerably in top manuring and for general use on light soils when a slower-acting fertiliser is prepared. They usually contain 4.7% of nitrogen, 1.3% phosphoric acid, and 1.2% potash.

The following table gives the percentages of various elements present in the oilseed-cakes making them suitable for manures :—

	Nitrogen	Phosphate	Potash
Rape cake	5 to 6.5 p. c.	3.5 to 5.0 p. c.	3.5 to 5 p. c.
Castor cake	4.0 to 7.0 p. c.	1.5 to 3.5 „	1.9 to 2.9 p. c.
Cotton-seed cake	7.0-10.0 p. c.	1.0 to 3.0 „	1.5 to 3.0 p. c.
Linseed cake about	3.0 p. c.	about 1.0	about 1.0 p. c.
Groundnut cake	8.0 p. c.	1.4 p. c.	1.2 p. c.
Neem cake	5.0 p. c.	1.3 p. c.	1.7 p. c.

(f) Green Manuring

When farmyard manure is scarce, green manure is a suitable form in which to supply organic matter to the soil to keep up the supply of the humus. In the agriculture of most ancient civilizations like the Greek, Egyptian, Roman, Chinese, Indian, etc., legumes have always formed an important part in the cropping systems practised. The value of leguminous plant lies in their ability to fix the free nitrogen in atmosphere and accumulate it in their root nodules in appreciable quantities with the help of some useful micro-organisms who live in symbiosis with the plants. Various leguminous crops add nitrogen to the soil from 40 to 140 lbs. per acre, depending on the soil, climatic conditions and trends of crops, the average being about 80 lbs.²

The efficiency of green manures compared to others will be apparent from the following figures worked out from the recorded field experiments in the Madras Province³ :—

¹ Voelcker, *Op. Cit.*, p. 106.

² *Eighth Meeting of Crops and Soils Wing*, p. 230.

³ S. Y. Krishnaswamy, *Rural Problems in Madras* (1947), p. 116.

Manure	Efficiency compared to that of Green Manure 100
No Manure	33.0
Phosphate only	50.0
Nitrogen only	70.0
Nitrogen Phosphate	90.0
Green Manure	100.0
Green Manure Phosphate	120.0
Green Manure Nitrogen	133.0
Green Manure Nitrogen Phosphate	166.0

Taking cereal and other non-leguminous crops continuously from the land will naturally exhaust the fertility of the soil, for such crops only remove large quantities of nitrogen and other food elements without returning any. Cereals have been rightly described by Shultz-Lupitz as "nitrogen consumers and leguminous crops as nitrogen accumulators." Legumes thus are a very useful plant species which instead of depleting the soil, help in increasing its nitrogen contents while deep-going and fine roots increase the organic matter content of the soil and thus improve its physical properties. While cereals supply us with our requirement of starch and carbohydrates, legumes supply us the valuable proteins.

The use of green manure increases the water holding capacity of the sandy soils, improves the tilth of clayey soils by opening it, increases the aeration, facilitates drainage and requires less water for crops. It creates crumb structure in soil which is most important from agricultural point of view. It increases the organic matter content of the available nitrogen in the soil. It reduces the loss of mineral nitrogen by leaching, decreases the alkalinity of the alkaline soil and it may concentrate nutrients likely to be deficient in the surface soil and leave them there in the readily available form.¹

Crops used for green manuring are of two types—leguminous crops and non-leguminous crops. The former supply both nitrogen and organic matter, while the latter only organic matter.

The method of green manuring consists in growing such special crops which are more or less of a herbaceous character and rapid growth and capable of forming a good cover on the ground in a short space of time like groundnut, berseem, pulses, Sann-hemp, guar, indigo, methra, soya-bean, khesari, cow-pea or Dhaincha either alone or intermixed with others for the purpose of digging or ploughing into the soil in a green state when they have

¹ Pandey and Verma, *Soil Fertility and Green Manuring in Rural India*, Aug., 1955, p. 316.

reached a suitable height or before flowering. This method of enriching the soil is considered to be one of the most economical as well as efficacious, the fresh vegetable matter being returned to the soil with greater advantage than when it has been decomposed and much of its goodness has been lost in the process of rooting and fermentation.

Experiments conducted with leguminous green manures indicate that 50 to 80% of the nitrogen is returned in the succeeding crop. The residual effect lasts for 2 to 3 years but with decreasing efficiency. The nitrogen of a green manure is said to be much more readily available to the succeeding crop than that of stable manure. The rate of nitrification is greater in soils on which a leguminous crop has grown. Increase in availability of other elements, improvement in physical structure of the soil, suppression of weeds, change in soil reaction, conservation of soil and its nutrients, preservation of losses through leaching, etc., are other benefits accruing from green manuring. Green manuring in India is adopted for (a) transplanted paddy, (b) sugarcane, (c) irrigated wheat. Increased yields of paddy have been reported from Madras, M. P., U. P., Bengal and Orissa.

(g) Rotation of Crops

Soil fertility can also be regained by practising the rotation of crops. According to Leighty, "Crop rotation or the growing of different crops in recurring succession on the same land" was recognised as advantageous by early agricultural scientists and was made the foundation of the improvement in agriculture which took place in England, in large parts of continental Europe, and in U. S. A. during the last part of the eighteenth and especially during the 19th century.¹ The benefits to be derived from the growing of leguminous crops in alternation with cereals were distinctly recognised by the ancient Romans and Greeks as well as by early Indians; and the benefits of growing intertilled turnips or root crops in rotation with barley, clover and wheat were discovered about 1730 in England. The farmer of ancient Rome understood that crops following beans, peas and vetches were usually better than those following wheat or barley, but it was not until the last quarter of the 19th century that people learned that the legumes with the aid of associated bacteria have the power of feeding on the free nitrogen of the air while the non-leguminous plants can draw only on the nitrogen supply stored in the soil. Experiments conducted at I. Agricultural Research Institute have shown that growing of a legume like *berseem* develops a stable type and high degree of soil fertility for the succeeding cereal crops and

¹ U. S. Department of Agriculture, *Year-book of Agriculture*, 1938, p. 406.

that higher yields of wheat could be obtained for 3 to 4 years than when wheat is grown continuously.

The effects of crop rotation on yields are manifold. Rotation aids in controlling weeds and certain crop pests and diseases. It may render manure and chemical fertiliser more effective. It increases the soil supply of organic matter and different crops in themselves may exert beneficial effects on those which follow. A study of the long-continued soil fertility experiments made both in England and America has disclosed the following facts about crop rotation in its relation to soil productivity: (1) In general, crop rotation has been found to be practically 85% as effective as farmyard manure and complete commercial fertilisers in maintaining the yields of wheat, corn and oats and about 90% as effective as these fertilisers in increasing the yields of these major crops. (2) The favourable effects of crop rotation do not impair the benefits derived from the use of fertilisers, so that when these two farm practices are combined the one practice adds to the benefits of the other. (3) In comparison with the effectiveness of manure and commercial fertilisers, the relative value of crop rotation is practically 20% higher on soils sufficiently applied with lime as compared with soils that are acid. In view of these advantages offered by crop rotation, we must emphasise more on the system of practising crop rotation in India where farmyard manure is not available in full quantity as it is limited by the number of farm animals.

(h) Mixed Cropping

Yet another way of regaining the lost fertility of the soil lies in the secret of mixed farming. The system of mixed farming is practised widely in India and has been an important feature of all old agricultural civilizations. The reason why Indian soils have not lost their fertility completely may in part be due to this system of mixed cropping leguminous component helping to maintain soil fertility. Crop mixtures such as wheat, gram, barley, peas, jowar, cotton, etc., are prevalent cropping systems in India. Such mixed crops, in addition to maintaining soil fertility are a guard against total failure of harvest due to unfavourable seasons, particularly some produce is obtained from the small holdings obtained in India. In mixed crops with different root habits the plant food is utilised to the best advantage and there is no competition. Mixtures also furnish protection to other crops, *e.g.*, jowar protects cotton from hot winds in the Punjab. Besides maintaining the soil fertility, mixed cropping also enables the farmer to get not only an adequate supply of cattle-dung and urine but to grow food crops in proper combination with other products which enrich the

soil. The I. C. A. R. made successful experiments in U. P., M. P. and in Western Pakistan. They showed that the yield was greater, money income increased substantially, and the cultivator had a better diet. Mixed cropping is specially suited for the dry farming areas where the main problem is to collect, preserve and use all the moisture available.

The following table shows the rotation of crops followed in India¹ :—

Important Crop Rotations

Two-year rotation 1		Three-year rotation 2	
1	Rice Pulses	1.	Wheat Maize Sugarcane
2.	Jowar or Maize Wheat or Gram	2.	Sugarcane Wheat Cotton
3.	Cotton or Jowar Groundnut or Jowar	3.	Wheat Wheat Torla
		4.	Rice Sugarcane (Plant) Sugarcane (Ratoon)
		5.	Wheat Maize Sugarcane

The crops used for mixtures in India are :—

- (i) Cereals . . Jowar, Wheat, Maize, Oats, Barley and Ragi, etc.
- (ii) Legumes . . Arhar or *tuar*, Cow-peas, Guar, Urd, Mung, Groundnut, Gram, Lentil and Peas, etc.
- (iii) Oilseeds . . Castor, Til, Linseed, Mustard and Rape, etc.
- (iv) Other Crops Cotton and Sugarcane.

Although legumes are the main components of the mixture but in some parts of the country non-legume constitutes the components of the mixture such as wheat and barley in the Punjab, wheat and sugarcane or tobacco and sugarcane in Western U. P., cotton with rala or bajri in Madras and Bombay.

¹ *Indian Agriculture in Brief*, 1955, p. 19.

The following table shows important crop mixtures followed in India :—¹

<i>Important Crop Mixtures</i>		
State	Crop Mixture	
Bombay	Rice and Jowar	Rice and Cotton
	Cotton and Jowar	Jowar and Tur
	Wheat and Linseed	Cotton and Tur
	Bajra and Tur	Groundnut and Cotton
Madhya Pradesh	Wheat and Gram	Wheat and Linseed
	Linseed and Gram	Tur and Cotton
Punjab and P. E. P. S. U.	Wheat and Gram	Barley and Gram
	Wheat and Barley	Jowar and Guar
	Chari and Moth	Maize and Senji
	Sarson and Wheat	Toria and Gram
	Til and Cotton	Moth and Cotton
	Mellons and Cotton	Senji and Cotton
Uttar Pradesh	Wheat and Barley	Wheat and Gram
	Barley and Gram	Wheat and Mustard
	Jowar and Arhar	Maize and Urad
	Cotton and Arhar	Bajra and Arhar
	Bajra and Peas	
West Bengal (Wheat growing tracts)	Wheat and Gram	Wheat and Linseed
Hyderabad	Jowar and Moong	Jowar and Urad
	Jowar and Moth	Tur and Cotton
	Wheat and Gram	Wheat and Mustard
	Gram and Mustard	Wheat and Barley

(i) Chemical Fertilizers

In view of great difficulty and the impracticability of supplying the potential manure requirements of India by means of organic manures artificial fertilisers become a matter of great importance.

An important factor that has contributed to the increase in agricultural production in the U. S. A. and the continent of Europe is the introduction of synthetic fertilisers. The fixation of atmospheric nitrogen as a result of scientific and engineering advances has brought a tremendous change in the last 25 or 30 years in the relative importance of the nitrogen sources dependent upon chemical production. But recently criticism has been levelled against its effect. Their continuous and sole application has deleterious effects on the soil due to various causes. The

¹ *Indian Agriculture in Brief*, 1956, p. 20.

classical researches of Colonel McCarrison and R. B. V. Nath in India and those of Mackeridge and Bottomley in Europe and Clarke and Roller in America, have conclusively proved that crops raised with the organic manure, are pre-eminently superior in their nutritive value to those raised with artificial fertilisers, and that seeds produced from the field, treated with organic manure possess greater germination power than those obtained from lands manured with artificial fertilisers. Improving the texture and water-holding capacity of the soil and providing food for the innumerable and invisible organisms inhabiting the soil are the benefits which organic manure confers on plant growth. In addition to these indirect advantages organic manures appear to give plants a better balanced nutrition and provide certain nutritive factors, which chemical fertilisers either do not supply or supply only imperfectly. The application of chemical fertilisers should, therefore, be supplemental to bulky organic manures like green manures or cattle manure.

Secondly, the greatest limiting factor is water. It is well known that crops wither if fertilisers are applied in absence of abundant water supply. The use of fertilisers has, therefore, to be restricted to irrigated areas and those with an assured rainfall. The application of fertilisers in India is limited to 60 to 70 million acres of cultivated land.

Thirdly, little information is available as to the most suitable time for the application of the fertilisers, about the correct proportions of nitrogen, phosphorus and potassium for different soils and crops, and the proportion in which organic manure should be used with fertilisers. More research and experiment are required in regard to the use of fertilisers, before the Agricultural Department will be in a position to give full and satisfactory advice as regards their use.¹

The Planning Commission observes that both manurial resources of the organic type and chemical fertilisers are necessary for maintaining and increasing soil fertility. "It is well known that a continuous application of chemical fertilisers only without the support of any bulky organic manure, leads in course of years to soil deterioration and progressively lower yields Moreover, the high prices of fertilisers in recent years have resulted in larger quantities being utilised for commercial crops in preference to food crops. Unless, therefore, the prices of fertilisers are substantially reduced as to be within the reach of the grower of foodgrains, any expansion of the use of fertilisers for food crops will be difficult."²

1 *Famine Enquiry Commission Report*, p. 148.

2 *First Five Year Plan*, p. 259.

The recent food crisis in India led to an investigation of the foodgrains policy of the Government, and the Gregory Committee Report recommended the establishment of a fertiliser factory with a capacity of producing 350,000 tons of sulphate of ammonium per annum. Accordingly the Sindri factory was established in Bihar, about 15 miles from Dhanbad, at Sindhri, at a cost of over Rs. 23 crores. It is under the management of a private limited company known as the Sindri Fertilisers and Chemicals. It went into production in October 1951. At the end of 1951 its production was 7,445 tons. Thereafter, it steadily rose to 2,19,340 tons in 1952-53; 2,49,953 tons in 1953-54 and 2,99,983 tons in 1954-55. The factory exceeded the target by producing 3,21,000 tons of ammonium sulphate during 1955. Six other plants in India have a rated capacity of 80,000 tons per year. India's need of artificial fertilisers as estimated by the Food Policy Committee vastly exceeds the total potential output both of the Sindri factory and of the other producers.

By the end of the Second Five Year Plan the entire increased demand for artificial fertilisers using nitrogen, is expected to be met by a 50 per cent expansion of Sindri and the setting up of three new fertiliser factories at Nangal, Rourkela and Neiveli. The Sindri expansion scheme, which is expected to yield 70 tons of urea and 400 tons of ammonium sulphate nitrate per day, is already under execution. Estimated to cost over Rs. 10 crores, the scheme is scheduled to be completed by the end of 1957. Under the scheme, the entire quantity of 10 million cubic feet of gas from the coke oven plant of Sindri will be utilised to make fertilisers.

The Nangal factory, expected to cost about Rs. 22 crores, will produce 200,000 tons of ammonium nitrate and about 7.5 tons of heavy water per year. The factory expected to go into production by 1959-60 will require about 160,000 kw. of power, which will be provided by the Bhakra project. Of the other two factories, those to be set up at Rourkela and at Neiveli, that at Neiveli as the part of the lignite project, will produce 80,000 and 70,000 tons of nitrogen per year respectively. The Rourkela plant will produce 4,42,000 of nitro-limestone while the Neiveli factory will produce 40,000 tons of urea and 200,000 tons of ammonium sulphate nitrate per year.

For some time past there has been a rapid growth in the use of fertilisers. This is mainly due to the G. M. F. campaign. The following table shows the quantities of fertilisers distributed, the acreage benefited and the additional production obtained since 1951-52.¹

¹ *India*, 1956, p. 148.

Year	Quantities distributed (lakh tons)		Total	Acreage benefited (lakh acres)	Additional production (lakh tons)
	Ammonium sulphate	Other fertilisers			
1951-52	1.15	0.37	1.52	20.92	2.20
1952-53	1.11	0.68	1.79	33.03	3.15
1953-54	2.12	0.82	2.94	46.65	4.57
1954-55	2.89	0.45	3.34	66.77	5.44
Total	7.27	2.32	9.59	167.37	15.36

Andhra, Madras, U. P. and Bombay utilise the largest quantities of fertilisers. But in some States such as Bihar, Orissa, and M. P., where there is great scope for the use of fertilisers, the cultivators have been slow to take to them. The chief difficulty in the popularisation of the fertilisers is the lack of adequate purchasing power on the part of the cultivators. A scheme of deferred payment has, therefore, been evolved to enable the States to supply fertilisers to the cultivators on loan, payment being collected either in cash or kind after the harvest.

CHAPTER 6

FOREST RESOURCES AND FOREST POLICY

Introduction

There was a time—a millennium or so back—when the broad picture of India was that of a sea of forests with scattered islands of cultivation. The economic and cultural life of the country centred largely around forests and rivers and both were held to be sacred. *Rigveda*, the oldest religious book of the Hindus, has a striking hymn to the Goddess of Forests. *Manusamhita*, the ancient Hindu law code, regards the destruction of trees as a serious offence and prescribes a heavy penalty for it. *Agni Puran*, another Hindu scripture, goes so far as to say that a man who plants trees for the welfare of the public obtains absolute bliss. Many famous events in the history of Indian civilisation are associated with forests. *Mahabharata*, the great epic, was written in the sacred groves of *Naimisharanya*. The culture of India gathered strength in the *Tapovan*s all over the country where the sages lived and men of affairs spent their retired life. The race memory of the Hindus is intertwined with the beauties of *Nandanvana*, with dramatic events in *Dandakaranya*, with the tragic atmosphere of *Ashokavana*. And the story of Krishna is inseparable from that of *Brindavana*. But all these places and many others which are still called *aranya* or *vana* (forest) are no longer forests in reality.¹ Most of them are now villages or towns and in some deforestation has gone to such an extent that not a single tree can be seen.

As the pressure of population increased it was natural that agriculture should encroach more and more on the forests. The life which centred around forests soon became centred around agriculture. It was, however, after the Muslim invasion of the country that the clearance of forests began to assume serious proportions. While the old Hindu tradition held forests to be sacred and discouraged cutting down trees, the new invaders did not have the same religious or sentimental scruples against destroying them, although they were fond of gardens and orchards and planted many noble avenues around their seats of Government. They pursued a deliberate policy of encouraging agriculture at the expense of forests because the former yielded more revenue. And once the restraining influence of the State was removed, the increasing pressure of population accelerated the process of deforestation in

¹ *The National Forest Policy of India*, (1952), p. 17-18.

the country. Occasionally, of course, villages relapsed into jungles when they were depopulated by war, famine or disease. But by and large forests fought a losing battle throughout the centuries against encroaching agriculture.

Types of Natural Vegetation

The wide variations that obtain in the physical features, soil and climate of India give rise to a large variety of natural vegetation, tropical, sub-tropical, temperate as well as alpine type—in crop lands as well as in forests. Areas at a height of 3,750 metres¹ and over above sea level contain alpine vegetation. Below that, at heights of from 2,000 to 3,500 metres, temperate vegetation with deciduous and coniferous trees is most common. In the lower parts of the hills and in the plains, tropical vegetation is found, which is by far the most common in the country though it differs widely from place to place according to relief and humidity. West of the great band of the Ganges at Rajmahal, the indigenous vegetation is that of a dry country. In the extreme West such trees as exist are leafless during the dry season. Towards the East, where the rainfall is heavy, the vegetation is on the contrary luxuriant with evergreen plants and trees. That is also true of coastal belts of the South. On the loftier parts of the Deccan plateau, where rainfall is low, only small trees and grasses grow. In the centre of the country, monsoon forests generally exist except in the drier parts where grasses constitute the main vegetation.

Let us have a brief idea of the forest types available in India. From the slopes of the Himalayas to Cape Comorin, and from the dry tracts of Rajasthan to the eastern limits of the Assam hills, there is an infinite variety of forest type :

(i) Where rainfall is adequate (over 75 inches) and its distribution satisfactory *evergreen forests develop*, consisting of lofty, dense and evergreen trees with numerous epiphytic ferns, mosses, orchids and aroids. These forests are found throughout the Western Ghats from Bombay southwards to North and South Kanara. Tinnevely, Mysore, Coorg, Coimbatore, Travancore and the Andamans and in north-east India in sub-montane divisions of north Bengal, the Coastal strips of Orissa and Assam. The trees of economic importance are ivory, palm, bamboo, mahogany and sandalwood.

(ii) Under less copious rainfall *deciduous forests* occur, containing teak or sal, rosewood, kine, bamboo, termilias,

¹ 1 Metre \approx 3.28 ft.

mulberry, sisu, myrabolans and a large number of valuable trees. This type is generally found along the eastern side of Western Ghats, in portions of M. P., Bombay and Madras and in drier parts of Coorg, the Western portions of Mysore, Cochin and Travancore. In north this type is distributed practically throughout northern India especially in U. P., Bihar, Orissa, West Bengal and Assam.

(iii) Where rainfall is still less, *thorn forests* appear in which the vegetation becomes sparse and consists of *acacias*, *prosopis*, *tamarix* and *albizzias* and other thorny bushes. This type occurs in Central India throughout the dry region of the Indian peninsula, to the lee of the Western Ghats, from the extreme south up to Indore and Bhopal, being prominent in Madras, Hyderabad and Bombay and in the S. W. Punjab, Rajasthan and in portions of U. P.

(iv) The Himalayas have a zoning of their own running from, roughly west to east in a semi-circle, the zoning depending mainly on altitude, though rainfall plays an important part as one proceeds east. At the foot of the hills up to 1,500 ft. we find tropical forest known as *Tarai* forests containing bamboos, tree-ferns, palms and bananas. From 1,500 ft. to 4,000 ft. we have a belt of the subtropical forests of which the *sal* is the typical tree. From 4,000 ft. to 7,000 ft. we pass through the temperate forest of *chir*, low-level oaks, *rhododendrons*, *magnolias* and *laurels*, etc. From 7,000 ft. to 9,000 ft. we pass through the sub-alpine zone of which *deodar*, *spruce* and *Himalayan or blue pine* are typical. From 9,000 ft. higher there is the Alpine zone containing the *Kharsu oak*, *silver fir* and *birches*.

(v) *The Beach Forests* extend all along the coast where a sandy beach occurs. Strong salt-laden winds render the habitat Xerophytic. At other places, small evergreen and deciduous trees numerous shrubs occur. Where open the maritime grass and other surface creepers which bind the sand are conspicuous.

(vi) *Tidal Forests* are found on ground near the sea coast which is flooded with slightly brackish water at high tide. Such forests occur at the mouths of Mahanadi, Krishna, Godawari and in the Ganges and Brahmaputra deltas. The forest is closed evergreen having species like *garan*, *bogla*, *sundari*, etc.

(vii) *Fresh Water Swamp Forests* occur above the salt water limit on wet alluvium at the head of big deltas of rivers in parts of Assam, Bengal, U. P. and Madras. The forest is rather an open crop of evergreen trees containing *Kadam*, *Pandanus*, etc.

(viii) *Riverine Forests* are confined to the banks of larger rivers consisting of new or fresh alluvium. The most characteristic

trees are khair, sissoo, tamarix growing throughout the northern belt from the Punjab to Assam.

Regional Distribution of Vegetation

Although there is thus a very wide variety of vegetation which is reflected in the forests as well as in the agriculture, the proportion of the forest area is rather low compared to most of the progressive countries of the world, as would be clear from the table given below¹ :—

Land Use in India and Other Countries

Countries	Total land area (Million Hectares)	Forest area (Million Hectares)	As percentage to total land forest area (Percentage)	Per capita forest area (Hectares)
<i>Total Asia</i>	2700·5	566·8	21·0	0·4
India	328·1(a)	73·3	22·3	0·2
Burma	67·7	39·0	37·6	2·0
Ceylon	6·3	3·5	55·6	0·4
China	940·8	80·5	8·6	0·18
Indonesia	190·4	121·0	63·5	1·6
Iran	163·6	19·0	11·6	1·0
Japan	36·6	22·6	61·8	0·3
Thailand	41·6	32·1	77·2	1·6
<i>Total Europe</i>	479·0	135·7	28·3	0·3
France	55·0	11·4	20·7	0·3
Italy	29·3	5·6	19·2	0·12
Western Germany	24·0	6·7	28·1	0·14
U. K.	24·1	1·6	6·5	0·03
Sweden	41·1	23·0	56·0	3·2
Finland	30·6	21·7	70·9	5·3
Spain	49·9	12·6	25·2	0·4
U. S. S. R.	2189·3	742·6	33·9	3·5
<i>Total North and Central America</i>	2307·4	721·9	31·3	3·4

(a) includes 15·8 million hectares of land, for which break up into (3), (4) and (5) is not available.

¹ Unasylva, *An International Review of Forestry and Forest Products*, September 1954, F. A. O.—(except for figures in respect of India, which are based on later data; the definition of agricultural area adopted in the case of India is the same as used by the F. A. O.)

Countries	Total land area	Forest area	As percentage to total land forest area (Percentage)	Per capita forest area (Hectares)
	(Million Hectares)			
1	2	3	4	5
U. S. A.	770.9	252.5	32.8	1.8
<i>Total South America</i>	1750.5	861.0	49.2	7.4
Argentina	277.8	70.0	25.2	3.9
Brazil	846.4	480.2	56.7	8.6
<i>Total Africa</i>	2970.3	801.6	27.0	4.0
Australia	770.4	41.4	5.4	5.1
Total World	13251.8	3915.3	29.5	1.6

With regard to forest resources, Brazil, Argentina, Peru, Columbia, Mexico, Chile and S. Africa may top the list. Though Brazil is rich in forest resources yet her enormous resources have not yet been fully exploited due to their being situated in the inaccessible interiors. Forests also play an important part in Thailand, Finland and Norway. South and East Asia, Burma, Siam, Malaya, French Indo-China and East Indies are more or less self-sufficient to meet their domestic requirements, whereas China, India and Japan are deficient in many products.

A comparison of the percentage area of the land under forests in India with those of the other countries will reveal that we are really in a very backward position in this respect. In other civilized countries of the world from 20 to 25% of the area is considered as the minimum to be kept under forests to meet the probable demands of the industrial and agricultural population, whereas we in India have only 22 % of the land under forests.

The following table gives the regional distribution of forests in India :—

Forest Area of India by Regions/States

Region State	Geographical area (Million hectares)	Forest area (Million hectares)	Forest area as percentage of Geographi- cal area
(1)	(2)	(3)	(4)
North-West India :			
Uttar Pradesh	29.38	4.28	14.6
Rajasthan	33.72	3.39	10.1
Punjab	9.68	1.31	13.6
PEPSU	2.60	0.08	2.9

Forest Area of India by Regions/States

Region State	Geographical area (Million hectares)	Forest area (Million hectares)	Forest area as percentage of Geographical area
Jammu & Kashmir	24.03	2.86	11.9
Ajmer	0.62	0.05	7.5
Delhi	0.15	...	0.0
Bilaspur	0.12	0.05	44.2
Himachal Pradesh	2.71	0.93	34.2
East India :			
Bihar	18.21	2.94	16.2
Orissa	15.58	6.09	39.1
West Bengal	7.97	1.08	13.5
Assam	22.02	6.85	31.1
Manipur	2.23	0.60	27.0
Tripura	1.04	0.90	85.8
South India :			
Andhra	16.48	3.79	24.1
Madras	15.63	3.08	19.7
Mysore	8.63	1.37	15.9
Travancore-Cochin	2.37	0.79	34.4
Coorg	0.41	0.29	71.1
West India :			
Bombay	28.82	5.26	18.2
Saurashtra	5.53	0.24	4.3
Kutch	4.40	0.05	1.2
Central India :			
Madhya Pradesh	33.74	16.16	47.9
Madhya Bharat	12.05	4.33	35.9
Hyderabad	21.28	3.32	15.6
Bhopal	1.78	0.56	31.4
Windhya Pradesh	6.11	2.00	32.7
Andaman and Nicobar Islands	0.83	0.61	73.5
Total India	328.12	73.26	22.3

From the above table it would be gathered that most of the forests are concentrated in a few States only, *viz.*, Assam, M. P. Orissa and M. B. In most of the States of Northern India the proportion of forest lands to total area is very much lower than the all-India average. "The result of this unequal distribution is that they have meant to the peasant the denial of a flat roof over his house, the door gaping wide without shutters and furnishings without any furniture. It has pulled down the standard of his cultivation by obliging him to burn his manure in the absence of any firewood. It has adversely affected his animal husbandry by

reducing the supply of fodder."¹ Sir Howard remarked, "Probably 90 per cent. of the plains villages of U. P., probably half of Bombay, and all the centre and West of Bengal. Much of Bihar and the coastlands of Orissa contain populations with an almost completely unsupplied demand for forest produce."²

It would, therefore, appear that there is a great need not only for increasing the proportion of forest area for the country as a whole but also for a re-distribution of it. In other words, while there may be still some scope for clearance of forest lands in M. P., Orissa and M. B., there is a great need for afforestation in States like U. P., Bihar, Bengal, Bombay, Madras and Hyderabad.

In addition to above, it would also be necessary to readjust the regional distribution of forests to a certain extent so as to make it more rational and to supplement this minimum forest cover with a penumbra of other vegetal cover in such a manner as would not seriously encroach on crop-lands and yet would fulfil the protective functions.

Their Importance in National Economy

Forests are indispensable for the national development and fully grown up civilization. "Indeed civilization has been nursed, nourished and grown to manhood in the regions of temperate natural vegetation. A French proverb rightly says, "Forests precede civilization but deserts succeed them."³ To an agricultural country like India, their importance can hardly be exaggerated. They provide many useful commodities on which modern civilization and industrial life is based.

(i) Although the productive functions of forests in India are not *prima facie* so important as the protective functions, still they are *not* negligible. Compared to the 50 per cent of the national income which is contributed by agriculture the direct contribution of forestry is 0.7 per cent or 70 crores out of a total of Rs. 5,290 crores contributed by forestry.⁴

(ii) They provide fodder for about 155 million cattle, 43 million buffaloes and 100 million other animals; and provide edible fruits and roots of which the poor readily avail themselves.⁵ Grazing in State forests yields about Rs. 95 lakhs of revenue annually.⁶

1 Baljit Singh, *Whither Agriculture in India*, p. 31.

2 A. Howard, *Forest Policy for India*, p. 26.

3 Quoted in *Our Forest* (Publication Division, New Delhi),

4 *India*, 1956, p. 104.

5 *Moral and Material Progress of India*, 1924-25, p. 203 and *India*, 1956, p. 151.

6 *First Five Year Plan*, p. 291.

(iii) They provide employment to about 5·7 lakh people such as wood-cutters, sawyers, carters, carriers and raftsmen.¹

(iv) They are also the homes of India's submerged humanity—the tribals numbering 19 lakhs.

(v) Indian flora is rich in composition and value. India has 2,500 species of wood, of which about 450 are commercially valuable and are used for extracting acetic acid, acetone, methyl-alcohol, certain oils, creosote and valuable drugs like Sulphonamide and Chloroform.²

(vi) They also provide major and minor forest produce such as timber, round-wood, pulp-wood, fire-wood and charcoal and the minor produce like cane, drugs, spices, etc. The provided 4,51,476 thousand cu. ft. of timber valued at 1,75,349 thousand rupees and the minor produce to the value of 59,706 thousand rupees.³ The following table gives the annual out-turn of timber and fuel from 1936-37 to 1948-49:—

Year	Average out-turn per annum in thousand tons	Out-turn in tons per sq. mile of forest
(a) Pre-war years :		
1936-37 to 1938-39	4,379	50
(b) War-years :		
1939-40 to 1945-46	5,764	59
(c) Post-war years :		
1946-47 to 1948-49	6,130	65

The following table gives the value of forest produce and net revenue on Forests in India⁵ :—

Value of Forest Produce and Net Revenue in Forests
(Crores of Rs.)

Year	Major	Minor	Total	Net Revenue
1948-49	14·10	4·96	19·06	8·73
1949-50	17·1	5·68	22·84	11·29
1950-51	19·08	6·92	26·00	14·13
1951-52	19·76	7·06	26·82	15·23
1952-53	17·53	5·97	23·50	17·35

¹ *Census of India, 1951, Vol. I. Pt. I. A. p. 99.*

² *Our Forests, Op. Cit.*

³ *India, 1956 p. 154.*

⁴ *National Forest Policy of India, 1952, p. 9.*

⁵ *Indian Agriculture in Brief, p. 64 and 65.*

(A) Major Produce

Indian forests yield a variety of species, the most important of which are (i) *Babul* or *Kikar* (*Acacia Arabical*), a strong durable wood and very popular for all agricultural implements ; (ii) *Semal* (*Bombax malabaricum*) used for a large variety of ordinary goods like match boxes, match splints, packing cases and in plywood for rather poor boxes, (iii) *deodar* (*cedrus deodara*), a wood of yellowish brown colour moderately hard, oily and strongly scented and very durable, utilised for railway sleepers, carriages and wheels and suitable for wood carving ; (iv) *sissoo* (*Debergia Sissoo*), an excellent cabinet and furniture wood and also a good constructional timber ; (v) mulberry (*Morus alba*) excellent for sports goods ; (vi) *Chir pine* (*Pinus Longifolia*), a pink-coloured and moderately hard wood suitable for good railway sleepers, box making and yielding a valuable resin and turpentine ; (vii) *Sal* (*Shorea robusta*), the most used and best untreated sleeper wood of brown hard colour and also an excellent constructional wood for rafters, piles bridging, etc. ; and (viii) *teak* (*Teactona grandis*), suitable for cabinet and furniture making, ship building and building of railway carriages.

The woods of India cover almost every commercial use, aeroplanes, agricultural implements, axe and tool handles, bent wood articles, boat and ship building, bobbins, boot laces, brushes, buildings, carts and carriages, construction and general joinery work, co-operage, electric transmission poles, engraving and printing marine piles and harbour work, match splints and boxes, mathematical instruments, packing cases and boxes, pencils and penholders, picker arms, picture framing, plywood and lamin boards, railway carriages and railway keys and brake blocks, railway sleepers, rifle parts and gun stocks, road-paving blocks, shuttles, sport goods, tent poles and tent pegs, turnery, umbrella handles and walking sticks.¹ The other item under the major produce provided by our forests is the supply of wood for fuel. This supply of fuel obtainable from the forests is inadequate. "Probably 90% of the plains villages of the U. P. probably half of Bombay, all the centre and west of Bengal, much of Bihar, and coast-lands of Orissa contains populations with an almost completely unsupplied demand for forest produce.² The cultivators are, therefore, obliged by sheer necessity to burn the cow-dung cakes which in ordinary course of way should go to provide the best possible manure for the hungry land. Thus wherever the forests exist they provide fire-wood and save the wastage of useful manure.

¹ *Journal of Royal Society of Arts* (June, 1947).

² A. Howard, *Post-War Forest Policy for India*, 1944, p. 26.

The following table shows the quantities and value of timber, roundwood, pulp wood, fire-wood and charcoal during 1949-1952 :—

Year	Quantity	Value
	(In '000 cu. ft.)	(In '000 Rs.)
1949-50	5,34,528	1,71,648
1950-51	5,57,587	1,89,417
1951-52	5,13,921	1,99,776

For 1952-53, the break-up for these different kinds of woods is as follows :—

Products	(In '000 cu. ft.)		Total
	Coniferous	Broad-leaved	
Timber	28,596	74,723	103,319
Roundwood	3,983	9,378	13,361
Pulpwood	...	903	903
Fire wood	10,172	315,850	326,022
Charcoal wood	31	7,840	7,871
Total	42,782	408,694	451,476

(B) The Minor Produce

Besides, the major produce forests yield a host of minor produces which serve as raw material to numerous industries. Some of the most important minor produces include : (1) *Gum*, which is the produce of several types of *Acacia Arabica* specie, is largely used in the manufacture of ink, medicines, pastes, pills and coloured crayons ; (2) *Resin* obtained from pine and oak woods is extensively used in making furniture varnishes, sizing of paper, manufacture of laundry shop, as a flux for solder and a coating for casks and for shellac adulteration ; (3) *Sandalwood* is much valued for a variety of domestic purposes and is an auxiliary in the religious and ceremonial occasions. The wood is excellently carved and richly carved boxes, fans, ornamental articles, photo frames, and cabinetware of inlaid work are turned out from this wood. It is also used in the form of paste for its aroma, and as paints on body for its aroma and as paints on body for its cooling effects.

Wood is also distilled ; for extracting valuable oil from the heart-wood, which is used in perfumery, medicine and manufacture of soap ; (4) *Myrobolans* are one of the most valuable minor resources of forest revenue. They are extensively used for tanning hides and skins and for medicinal purposes ; (5) *Lac* is a product of certain trees like Kusum, Dak, Ber, Palas and Ghout, is very extensively available from Indian forests. Shellac is made from the grain lac or button lac. It is used in a number of industries the most important of which are the manufacture of gramophone records, the electric paint, varnish, sealing wax, photographic materials, the confectionery trade, munitions and fire works, anti-fouling compositions for ships bottom, shoe dressing and bangle making, plastic moulding, spirit lacquers, adhesives, baking enamels, etc. ; (6) various kinds of grass like elephant grass, *Sabai* and *Bhabbar* for manufacture of paper ; (7) *Cutch* and *katha* which are respectively used as khaki or brown dye and for chewing with pan ; (8) leaves for fodder and for *biris* ; (9) essential aromatic oil grasses like Lemon grass oil, Rosha grass oil, etc., used in preparation of medicines and perfumery. Besides these, a host of other commodities like herbs and drugs, oilseeds and rubber are also obtained from these forests. Thus it will be clear that the forests supply not only timber but also raw materials to numerous industries and have immense advantages.

Indirect Advantages

But the indirect advantages are not the less numerous and immense. They may also now be briefly discussed here :—

1. Forests exert healthy influence on climate

Forests exercise a very healthy and beneficial effect on the climate and rainfall of a place. The trees transpire large quantities of moisture and as such lower the temperature in hot regions. Thus forests render the climate more equable and increase the relative humidity of the atmosphere and increase the precipitation of the moisture, e g., in Etawah district of U. P., the rainfall used to be very precarious but with the afforestation in that area, the deficiency is noted more than compensated. When forests are either cut or remorselessly exploited, the sun heats up the rocks and the bare earth so that the hot air rises and forces up the clouds which no longer hold up their moisture in the form of rain and the country becomes drier than when it was covered with forests.

2. Forests regulate water supply as well

Forests also help to regulate the supply of water, produce a sustained feeding of springs, and tend to reduce the violent floods

and make the flow of water in the rivers continuous. Land denuded of vegetation is like a corrugated tin-roof. It sends down the water most quickly. When rain falls on the bare land the water just rushes down to the nearest stream or river. If the land is covered with good absorptive top-soil "made porous by the hidden conduits of burrowing earthworms, insects and roots of plants" there is a blotter for rain. It absorbs rain water and discharges less of it into the streams. Vegetation forms innumerable tiny obstructions to the downward flow of the excess rain water which the soil is unable to absorb. Each leaf, each blade of grass or a tangle of roots is a nature's miniature dam holding its share of rain drops. Each burrow and each crevice in the soil opened by a root is a subterranean storage for water. A vegetation cover acts like a blanket while bare, non-porous, unabsorptive soil without humus sheds water quickly. It thereby increases the intensity of floods whenever there is heavy rainfall. The heavy deforestation and, hence, the denudation of Chhota Nagpur hill slopes gives rise to severe floods which frequently cause great destruction of crops in Chhota Nagpur and Orissa every year. "In defending the land against the evils of erosion, aridity and climatic excesses, forests perform services no less valuable and no more expressible in terms of money than those rendered by the defence forces of a country."¹

3. Abodes of Wild Life

Numbers of worms, insects and minute organisms feed on the humus and tunnel in the soil, thus making it suitable as a food for plants. The trees, bushes, herbage and grass of the forest support a number of herbivorous animals and carnivora. Thus the Indian forests have been famous for the number and variety of game animals like the tiger, the buffalo, pig, bison, sambhar and deer which generally reside in the interior of the forest. But in many places with the thinning out of the forests and fires, the animals have vanished from the forest reserves where they are specially protected.

4. They serve as strong line of defence

Even in the true military sense, the value of forests is immense. Forests serve as a strong line of defence and as a cover against aerial reconnaissance and attack. Use of artillery at close range and a free operation of mechanical units becomes extremely difficult in forests. Before the advent of the ships made out of iron and when the wooden ships were in vogue, the forest wealth of a nation was a single powerful factor for defence on

¹ *Our Forests, Op. Cit.*

land and attack on sea. Thus, the forests lying along the frontiers have to be carefully preserved and clear felling of trees has to be prohibited as a measure of national defence.

It will thus be evident that the above facts confirm the observation of P. H. Chutterbuck that "Forests are national assets and civilisation is in urgent need of them. Not only do they provide the supply of timber, produce a number of raw materials and fodder and incidentally give a revenue to the State, but their indirect advantages are far more important."

Causes of Backwardness of our Forestry

In spite of our being rich in forest resources, they have not been fully exploited. Various causes are responsible for such a state of affairs. They may be briefly pointed out here.

(1) In India timbers are generally not properly seasoned. Ordinarily it has been deemed sufficient to fell the trees and leave the logs lying in the forest to dry without much in the way of further precautions. Under such treatment the softer woods decay and they have been characterised as worthless wood. A large portion of the forest woods have just little durability as such but if they are properly seasoned and used under conditions suitable enough they will last for many years and so form the larger part of the woody material that is consumed.

(2) The other difficulty in the way of forest exploitation is that very few types in the Indian forests are gregarious, to enable the economic exploitation, *e.g.*, teak grows in patches here and there and this involves a good deal of waste in exploitation because they do not occur in large single stand as they do in American or European coniferous forests.

(3) The timber consumption in India is so low that it deserves serious attention on the part of the Government and the public. This low consumption on our part will be clear from the following figures¹ :—

Country	Present area per 1,000 inhabitants		Per capita consumption
Canada	7,757	Acres	250 Cu. ft
Finland	1,470	"	299 " "
U. S. A.	430	"	200 " "
Sweden	960	"	129 " "
Norway	650	"	118 " "

¹ Hailey, *Economics of Forestry* (1928), pp. 18-31.

Russia	440	Acres	66	Cu. ft
France	60	"	26	" "
Germany	50	"	27	" "
Great Britain	10	"	15	" "
Belgium	20	"	24	" "
Netherlands	10	"	16	" "
India	26	"	1.5	" "

When we remember that timber is an essential element in human civilisation, that it is used for diverse purposes and fuel for daily use, we can well understand how low is our standard of living, how poorly housed and how poorly furnished we are. There is little demand from the public for timber for household purposes. In Europe and America the whole of the edifices are built of timber, but our hot climate does not suit this type of buildings for if wood is used, planks are liable to crack in summer due to extreme heat. Moreover, the rats, white ants and other insects spoil the durability of the wood and thus they shorten their life. In India the per capita consumption of round wood is 1.5 cu. ft. as compared with 58 cu. ft. in U. S. A. The consumption of pulp products is 1.6 lbs. as against 78 lbs. in U. K.¹

Though paper is essentially necessary for education of the masses, for official use and for newspapers, yet its consumption in India is inconceivably low as will be seen from the following table² :—

Country	Per capita consumption	Country	Per capita consumption
U. S. A	360 lbs	Germany	77 lbs.
U. K.	154 "	France	31 "
Sweden	85 "	Austria	26 "
Finland	51 "	Italy	18 "
Egypt	7 "	India	1.6 "

(5) Due to lack of transport and inadequate development of forest industries, much of the cheap timber and other minor produce go to waste. About 43% of the forests managed by the State are inaccessible due to want of suitable means of transport and communications. In the absence of good transport facilities like roads leading to the forests, extensive use of mechanical transport is not possible and hence the country carts and the water transport are the only means available for bringing the wood from the forests to the industrial centres but water transport, though cheaper, is not fully used since most of the Indian woods do not float and also due to rocks in the way of streams obstructing a free

¹ *Second Five Year Plan, 1956, p. 299.*

² Wadia and Merchant, *Our Economic Problem, 1954, p. 438.*

passage for plying the boats or floating the timber. In some of the coniferous forests of Europe and America, snow provides the easy and cheap methods of transport, which when hardened into ice provides a slippery road for the logs to be dragged to the river and are floated when the winter snow melts. Though Europe, Russia and America are bountifully endowed with this sort of transport, nature has not been kind enough to offer this advantage to us and, hence the transport of logs from the forests to the mills is very costly and at the same time difficult. Hence, unless suitable means of communication by removing the impediments for water transport and by connecting the major forest centres by railways are established, avoidance of waste and full utilisation of forests would be impossible.

(6) Our forests are very backward in principles of management, afforestation, plantation, and exploitation. We require the latest methods of silviculture, most economic extraction, and an enlarged army of forest engineers. Scientific planting, thinning, weeding, climber cutting, application of insecticides, adoption of fire protection measure, controlled grazing, construction of cart-roads, bridle paths, motor roads, application of ropeways, tramways, and motor tractors are the recognised methods of forest management and exploitation.

(7) The undeveloped condition of our forests is also due to insufficient number of trained officers. But this difficulty can be removed easily by taking the services of botanists, zoologists, chemists, engineers, and economists of highest distinction working in various educational bodies and the universities. The handicap of trained personnel may also be made good by the establishment of adequate number of Forest Schools and Colleges and Research Centres for training and research in forestry to man efficiently the plans for the improvement of our forests.

To sum up then, "The basic causes responsible for the unsatisfactory state of affairs of the Indian forestry at present are : colossal destruction of forest by the proprietary interests (like malguzars and zamindars); inadequate protection from fire; plant diseases; overgrazing of cattle; incomplete utilisation of forest wealth due to lack of well-conceived system of working plan; general absence of facilities for seasoning and preserving timbers; inadequate research with regard to utilisation of forest produce and above all due to want of adequate trained personnel for conserving and developing forest wealth; lack of information regarding quantities of timber; forest products available in our forests, and undeveloped means of transport including the high freight charged by the railway for forest products and the inaccessibility of the forest area."¹

¹ V. V. Sayana, *Our Forests and Forest Policy*, in *Indian Journal of Agricultural Economics*, Vol. IV, No. 2, p. 92-93.

Forest Policy of the Government

During the early years of the British rule, when conditions were unsettled, reckless destruction of forests went on unchecked. The East India Co. was more interested in immediate gains than in long-term benefits to the country. With the transfer of authority in 1857 from the East India Co. to the British crown, however, there was a welcome change of emphasis from immediate gains to long-term benefits. The rapidly shrinking supplies of timber and fire-wood, and the extensive soil erosion which followed deforestation compelled the Government to pay some attention to the urgent need for the preservation of forest wealth. In North Western India, particularly along the rivers Jamuna and Chambal and in the South along the banks of Krishna and Kaveri soil erosion had already become very extensive. On the mountain reaches too, especially in the Siwaliks and the Nilgiris, the cutting down of trees was followed by extensive soil erosion. In Bihar, Orissa, Assam and West Bengal floods caused by the silting up of river beds became very common after the destruction of forests. In Rajasthan extensive areas which were humming with life not very long ago were engulfed by the advancing sands of the great Thar desert which itself was to some extent, the result of man's thoughtless exploitation of the land surface in the past. Need was felt, therefore, for a well-defined forest policy in the interest of the economic and physical welfare of the country. The first Inspector General of Forests was appointed in 1863 and this marked the beginning of a rational management of forests. In 1894 the Government of India issued a Resolution on its forest policy which was perhaps the first of its kind in the world. The resolution was based on the following main principles :—

(i) The sole object to which the management of forests is to be directed is to promote the general well-being of the country;

(ii) The maintenance of adequate forests is dictated primarily for the preservation of climatic and physical conditions of the country and secondly to fulfil the needs of the people ;

(iii) Subject to these conditions—

(a) Permanent cultivation should come before forestry ;

(b) The satisfaction of the needs of the local population at non-competitive rates, if not free, should override all considerations of revenue.

(c) After the fulfilment of the above conditions, the realisation of the maximum revenue should be the guiding factor.

But this policy related only to State forests in the then British Provinces and did not apply to private forests or to the five hundred and odd Indian States.

The State forests were classified with reference to their primary function as follows :—

(i) Forests, the preservation of which was essential on climatic or physical grounds ;

(ii) Forests that afforded a supply of valuable timbers for commercial purposes ;

(iii) Minor forests ; and

(iv) Pasturelands.

The above classification, however, was not intended to be rigid ; for a given forest might fulfil more than one function.

New Forest Policy

It is in recognition of the great importance of both the protective and productive functions of forests to the Indian economy and especially for ensuring the best possible land use and land management in the country leading to a balanced development of forestry and agriculture that the Government of India have recently taken a number of important measures. In June 1952, they inaugurated the Vana Mahotsava or the festival of forests which brought to the fore-front the importance of forests in general in a predominantly agricultural country like India. The slogan "Trees mean water, water means bread and bread is life" soon caught the imagination of the people. Although India's culture was originally born and cradled under the shade of mighty forests and the planting and protection of trees were once part of its socio-religious traditions, tree-mindedness had disappeared from the popular consciousness in recent times. The Vana Mahotsava was designed to revive it and create an enthusiasm in the popular mind for the preservation of forests and planting of trees. The campaign evoked an encouraging response from the people and during the last five years about 120 million trees have been planted by the people themselves. Of these about 60% have become established. The mass consciousness aroused by this festival was also supplemented by an increasing activity on the part of Forest Departments. A Board of Forest was constituted with a view to ensuring an all-India integration of forest policy pursued by the various States and the formulation of a new forest policy taking into account the new developments that had taken place in the economic and political fields since the formulation of the first forest policy in 1894. The new policy

based on the following six paramount needs of the country was announced in May 1252 :

(1) the need for evolving a system of balanced and complementary land-use, under which each type of land is allotted to that form of use under which it produces most and deteriorates least ;

(2) the need for checking—

(a) denudation in mountainous region on which depends the perennial water supply of the river system whose basins constitute the fertile core of the country ;

(b) the erosion progressing apace along the treeless banks of the great rivers leading to ravine formation and on vast stretches of undulating waste lands depriving the adjoining fields of their fertility ;

(c) the invasion of sea-sands on coastal tracts, and the shifting of sand dunes more particularly in the Rajasthan desert ;

(3) the need for establishing tree-lands, wherever possible for the amelioration of physical and climatic conditions promoting the general well-being of the people ;

(4) the need for ensuring progressively increasing supplies of grazing, small wood for agricultural implements and in particular of fire-wood to release the cattle dung for manure to step up food production ;

(5) the need for sustained supply of timber and other forest produce required for defence, communications and industry ;

(6) the need for realisation of the maximum revenue consistent with the fulfilment of the needs enumerated above.

In the light of this policy the forests of India have been classified as follows :—

(a) *Protection Forests*, i.e. those forests which must be preserved or created for physical and climatic reasons. The policy has emphasised the need for reconditioning the mountain regions, river valleys, and coastal lands by establishing protective forests over larger areas and preserving the existing ones.

(b) *National Forests*, namely, those which have to be maintained and managed to meet the needs of defence, communications, industry and other general purposes

of public importance. It has been stressed that cultivation should not be allowed to encroach upon these valuable timber-bearing forests and as far as possible these forests should be developed for attaining national self-sufficiency in timber supplies.

- (c) *Village Forests*, namely, those which have to be maintained to provide fire-wood to release cow-dung for manure and to yield small timber for agricultural implements and other forest produce for local requirements and to provide grazing for cattle. Village forests are essential to enable the farmyard manure to be diverted to the fields and to provide fodder for cattle. Without fuel trees, therefore, the fertility of the soil cannot be replenished.
- (d) *Tree lands*, namely, those areas which though outside the scope of the ordinary forest management are essential for the amelioration of the physical conditions of the country. The Land Transformation Programme of the Government of India envisaged the planting of 300 million trees in 10 years.

Since the correct solution of the land problem is to evolve a system of balanced and complementary land use under which each type of land is allotted to that form of use for which it is best suited, the New Forest Policy has specially recommended a detailed survey of lands with a view to their proper utilisation. It has emphasised that the role of forests in a national economy, both protective and productive, entitles forests to an adequate state of land. It proposes that the country as a whole should aim at maintaining one-third area to be under forests. There will, of course, be regional variations. As an insurance against denudation, a much larger percentage of land, probably 60%, may have to be kept under forests in the Himalayas, the Deccan and other mountainous tracts liable to erosion. In the plains, however, the proportion may be lower, say 20% and in view of the pressure of agriculture, efforts for the extension of tree lands would have to be centred on river banks and other convenient places not suitable for cultivation. It has been recognised that forests should be extended over waste lands suitable for the purpose and deforestation should be allowed for extension of permanent agriculture only where the area under forests is above the minimum requirement or where some equivalent area can be afforested in a more suitable zone in the neighbourhood. Replacement of useless shrubs and jungles by plantations of valuable trees is also a part of this programme.

Another important development that has taken place recently is the formation of a Soil Conservation Board in December 1953,

to organise, co-ordinate and invitiat^e soil conservation, to assist the States and River Valley Authorities in drawing up scheme for soil conservation, to arrange for the training of technical personnel and to recommend financial assistance for schemes to States and the River Valley Authorities. The Board is also required to devote attention to the problem of desert control. It has already approved schemes for the immobilization of the Kutch desert and for the afforestation of the U. P. and Rajasthan deserts. A Desert Afforestation Research Station has been established at Jodhpur. It is proposed to create a green belt on the western border of Rajasthan about 55 kilometres long and 7 kilometres broad. Further, steps are being taken to increase forest area in Rajasthan by about 50% for the creation of windbreaks round agricultural fields and for creating subsidiary forest belts more particularly between the outer desert and the inner arid zone. The Indian Board for Wild Life was constituted in 1952 and has done useful work in the cause of preservation of wild life.

Under First Five Year Plan

The demand for agricultural as well as forest products will increase with the increase in population, the rise in the standard of living of the people and the development of industries. The increase in demand will be met, it is hoped, by planned development of both agricultural and forest resources. The First Five Year Plan of the country (1951-52 to 1955-56) had to give the highest priority to the development of agriculture and irrigation and more than one-third of the total expenditure was earmarked for these two items because the immediate problem was food shortage. But even then the First Five Year Plan did not neglect forests altogether and provided for a total expenditure of Rs. 9.6 crores for the development of forestry. On an area exceeding 75,000 acres, the vegetative cover was restored by afforestation. Over 3,000 miles of forest roads were constructed and over 20 million acres of forest land under private management was brought under State control. Matchwood plantations were being raised at the rate of about 3,000 acres per year. The normal expenditure for forest administration was also increased from Rs. 85 millions in 1950-51 to over Rs. 100 millions in 1953-54. Special steps are being taken for the exploitation of the virgin forests of the Andaman Islands and of the Himalayas and extensive research on the utilisation of forest products is being conducted at the Forest Research Institute at Dehra Dun.

Under Second Five Year Plan

Programmes for the Second Plan include proposals for raising plantations for timber, matchwood, wattle and blue-gum and for more intensive use of forest lands and fuller utilisation of available forest resources. The forest plan for which Rs. 27 crores

have been provided, envisages afforestation to the extent of 600,000 acres, new plantations over an area of 300,000 acres 100 acres will be devoted to industrial plantations including match-wood, wattle and blue-gum, and improvement of 500,000 acres of pasture lands. It is also proposed to construct or improve about 7,400 miles of forest roads and, with the object of upgrading less well-known timbers through seasoning and chemical treatment and substituting them for more valuable timbers wherever possible, ten seasoning plants are to be established. About 2000 foresters will be needed for implementing the Second Plan.

What should be our future Policy?

In the country where 17% of the total land area is marked as not available for cultivation and another 10% as culturable waste, there is obviously ample scope for laying down a carefully planned land utilisation policy with a view to converting by afforestation some parts of this immense land resources into fuel and fodder reserves. It is true that this whole land may not be fit for afforestation, but if trees of different kinds, suitable to soils of different kinds are selected, a large portion of these lands can be afforested, Afforestation more urgently of certain catchment areas and slopes and dotting of entire countryside with small patches of forestry, which may continuously yield fuel and fodder should be the real objectives of our forest policy to check soil erosion and dessication, prevent flood and ensure the success of water projects either for irrigation or power.

Thus our forest policy should have for its objective the following principles :—

(a) Maintenance of all protection forest, *i.e.*, the forests required on physical and climatic grounds, for preventing (i) floods like those of the Jamuna, the Damodar or others, (ii) soil erosion which is occurring on such a large scale throughout the whole of India, especially in the northern States, (iii) land slips so common in Siwaliks and lower Himalayan areas, and (iv) for controlling water supply and retaining sub-soil moisture, and (v) for the preservation of wild life for recreation and scenic beauty.

(b) The maintenance of a minimum area of high forests (including also farmlands but not grasslands for pastures) for the supply of constructional timbers to meet the growing needs of the people.

(c) The maintenance and proper distribution of farm wood-lands for the supply of much-needed fuel and small timber for villagers and agriculturists, and pastures for their cattle.

(d) A thorough reorganisation of forests, with the deliberate object of establishing and developing a number of highly profitable and useful forest industries for the welfare of the people, whether in the heart of the forests or at the foot of hills or at any other suitable place to make for the fullest utilisation of all forest raw materials with cheap wood fuel as power. Among others the following industries deserve special attention. (1) "Pre-fabricated" wooden materials ; (2) Paper and paper pulp ; (3) Artificial silk ; (4) Celluloid ; (5) Match ; (6) Wood distillation ; (7) Essential oil and herbal extractions ; (8) Fruit preserving ; (9) Toys and sporting requisites, (10) Cane and bamboo, basket and umbrella sticks ; (11) Scientific api-culture ; (12) Charcoal making ; (13) Tea boxes making ; (14) Ply-wood and veneer industries ; (15) Lac-culture ; (16) Preparation of tanning and dyeing materials ; (17) Baskets, ropes and mat making and such other industries which if well organised, could confer material benefits on the rural population and the entire nation.

More attention should be devoted to the production of soft woods for industry.

We may suggest the following tree plantation plan for India :—

1. Bio-aesthetic for compounds, houses, banks, hotels, universities, colleges, schools, public offices, town roads, public parks and platforms of railway stations. These places we should select for trees with beautiful flowers and foliage to beautify them and to give pleasure to the people. *Kachnar*, *amaltas*, *gul mohar* and *milletia* come under this category.

2. *Roadside avenues of our national, provincial and district highways.* The sole criteria for selection should be shade plus economic utility. For this purpose, trees which yield timber or fruit should be selected such as *mahua*, *mango*, *tamarind*, *neem*, *jaman* and *sheesham*.

3. *Canal roads.* We should plant all canal roads with fruit trees like *mango*, *jaman*, *kaitha*. The mangoes of varieties like *langra*, *dussehri*, *sufeda* and *fajli* yield excellent fruit trees which are better than *desi* mango. There are thousands of miles of canal roads which can be planted with fruit trees and thus provide a valuable source of vitamins to the deficient dietary of our people.

4. *Village plantation.* Fruits, timber and fuel are the main requirements of the villages. Fruit trees like mangoes, *papaya*, lemons and sweet limes are recommended, for planting in the compounds of village house *phulwaris*, and along the bullock runs of the wells fitted with persian wheels. The plantation of papain and mulberry trees in the compounds of cattle sheds should be encouraged.

CHAPTER 7

FAMINES IN INDIA

What are Famines?

Famines are commonly defined as widespread and extreme scarcity of food. In 1867 the word 'Famine' was defined by the Famine Commission of that year "as suffering from hunger on the part of large classes of population." Encyclopaedia of Social Sciences, Vol. V, defines a famine as "the state of extreme hunger suffered by the population of a region as a result of the failure of the accustomed food supply¹." Although high prices, semi-starvation and malnutrition have been the lot of the millions of people all over the country, famine in its worst sense has frequently visited the country. In ancient times it implied the suffering and death, in modern times it means dear goods and general prevalence of unemployment. The famines in India, at present, are famines of money and not the famines of food, and the effects of local shortages are spread over larger areas, and thus the intensity is reduced, while formerly they used to be mostly localized.

Causes of Famines

The causes of famines may roughly be divided into immediate or direct causes and the remote causes. The immediate causes refer to such physical causes as the drought and ravages by insects, locusts and pests while the remoter causes refer broadly to economic factors.

Physical Causes

The most obvious direct cause is drought, i.e., the late commencement, or insufficiency, or early cessation of the monsoon rains. Deforestation has resulted in insufficient rainfall; and therefore, a more perfect system of afforestation than has hitherto been practised will go a long way towards preventing drought. The artificial supply of water by means of irrigation is of even greater importance, and as the Famine Commission of 1901 remarked, "All provinces do not, indeed, present practicable schemes for the construction of great canals; but the possibility of smaller protective works has in no province been exhausted, while in some provinces they have as yet hardly been examined. For storage tanks, reservoirs, and, above all, irrigation well, the scope and the necessity are very great." Improved methods of agriculture and adoption of the system of dry farming are also needed

¹ F. A. Southard, Vol. V, p. 85.

to ensure the production of crops. Sometimes the crops are destroyed by floods against which an efficient system of drainage is the only safeguard. Insects pests can be eradicated through the use of disease-resistant seeds.

The transport facilities till recently, were not fully available and this prevented rapid supplies of food from the surplus areas to the famine-stricken areas. To give an example, in the terrible famine in the North-West Province in 1833, wheat was selling at Agra at 13½ seers per rupee but in Khandesh in the same year it was selling at 61 seers per rupee.

Economic Causes

Important as these physical causes are, the chief cause of famines is an economic one. Drought or excessive rainfall may be responsible for the insufficient production of crops in certain areas, but the main reasons for heavy mortality and the intense suffering which accompany a failure of crops is due to the lack of reserved power of the masses. The Famine Commission of 1880 remarked, "Though there was enough food in the country to feed the entire population, even in the worst years, yet people were lacking the means to purchase it." The Famine Commission of 1898 concurring in this view, remarked, "We think that the surplus produce of India, taken as a whole, still furnishes ample means of meeting the demands of any part of the country likely to suffer from famine at any one time, supposing such famine to be not greater in extent and duration than any hitherto experienced." The calamities which devast the country from time to time are not, therefore, crop famines, but money famines. It is not the lack of food which people suffer from, but the want of resources with which to buy food. Speaking of the poverty of the cultivators the Famine Commission of 1901 said, "In good years he has nothing to hope for except a bare subsistence; in bad years, like last year, he falls back on the public charity."

Famine Areas

The areas of low rainfall—below 40"—commonly known as the zone of uncertain rainfall—include U. P., Western and Northern Rajasthan, Central Rajasthan plateau bordering on U. P., a large part of Bombay State, the whole of Madras (except the slopes of the Eastern Ghats), South and West Hyderabad and Mysore and some districts of Bihar and Orissa.

The existence of these extensive uncertain zones of rainfall has been the cause of India's famines. Between the two areas one protected by nature and the other by wit of man, lies a vast tract of a million square miles no portion of which can be said to be secure against the uncertainties of the season and the spectre of famine. The tracts most exposed to famine in India are the various districts of Rajasthan, the districts of Bijapur, Dharwar

Ahmednagar, Satara and Sholapur in the Bombay Deccan, and Anantpur, Bellary, Kuddapah, Kurnool, etc., districts of Madras and Andhra. Some broad propositions may be laid down in this-connection :

1. Generally speaking the lower the rainfall in a given tract the greater is its liability to serious deficiency from the average.

2. Famine is not usually the result of one dry year. The worst famines have been the result of two or even three dry years in succession. Their periodical recurrence is dependent on sunspot period. In every 5 years, there is an annual scarcity, in every 10 years a wider scarcity resulting in famine condition and in every 50-100 years scarcity extending over wide tracts covering several States.

3. Tracts in which the suffering from famine has at times been most intense are not necessarily those in which the rainfall is most liable to periodical defect. On the contrary, the effects of drought when it does come is felt in tracts like Gujrat, Malwa, (Madhya Pradesh) which owing to the sufficiency of rainfall over a long series of years have come to be regarded as immune and where protective irrigation works have in consequence been neglected.

Effects of Famines

(i) Famines result in heavy mortality. The Famine Commission of 1901 placed the total mortality at 5 millions. It has been estimated that between 1875-1900, about 26 million deaths took place as the result of famines alone ; this fact is borne out from the following figures¹ :—

Period	Frequency of famine number	Estimated mortality
1775—1800	3	—
1800—1825	5	1,000,000
1826—1850	2	400,000
1851—1875	6	5,000,000
1876—1900	18	26,000,000

Area and Population affected²

Period	Area in sq. miles	Population (millions)	No. employed in relief work
1888—1889	3,500	1	64,000
1891—1892	50,000	7	240,000
1896—1897	225,000	62	3,300,000
1899—1900	189,000	28	4,600,000

¹ S. K. Chatterjee, *The Starving Millions*, 1944, pp. 11-12.

² Wadia, P. A. and Merchant, K. T., *Our Economic Problem*, 1954, p. 105.

(ii) The economic consequences of the famines cannot be measured by merely counting the number of those dead as a result of starvation, suicide or diseases. The consequences are even greater. In a sample survey of the Department of Anthropology of Calcutta University, which investigated 700 families during the Great Famine of 1943, it was mentioned that, "how far the present distress has affected the economic basis of, and socio-psychological relations within the family may be gauged from that no less than 24.7% of the families have disintegrated. Husbands have driven away wives, and wives have deserted ailing husbands, children have forsaken aged and disabled parents, and parents have also left home in despair; brothers have turned deaf ears to the entreaties of the hungry sisters, and widowed sisters maintained for years together by their brothers have departed at the time of direct need. Tales of such woes blacken the face of our records and show where civilization stands when faced with the periodical needs of man. The scheduled castes have contributed the highest number of persons to this destitute population and number 52.7%, Muslims coming next form 39%, caste Hindus constitute 15.5% and Indian Christians 1%. The unmarried top the list with a total population of 54.2%, the married coming next 31.2%."

(iii) A famine does, no doubt, throw workers out of employment but unlike unemployment which one finds in England and Germany it affects millions of men, and the magnitude of the distress which ensues is unimaginable in modern Europe.

(iv) Hundreds of thousands of people succumb to starvation or diseases in the wake of famines, and those who are left behind remain in a condition more miserable than before, their resources crippled, health shattered, and capacity for work greatly impaired. Diseases are the invariable consequences of famines because of debility resulting from food deficiency or from vile food substitutes, e.g., plague in Bombay in 1896, cholera and small-pox in Rajasthan after 1868-1870 famine, cholera and malaria after the famine of 1899-1900 and cholera, malaria and small-pox after Bengal famine of 1943.

(v) A famine also means much loss to the Government. Decrease of revenue and increase of expenditure combine to dislocate its finances, e.g., the total loss of revenue and other expenditure to the Government was Rs. 1½ crores in the Orissa famine, Rs. 27 lakhs in 1886 famine and Rs. 11 crores in Bengal Famine of 1943.

(vi) Being accompanied by a fodder famine it causes destruction of cattle on a large scale, which means loss of power to the agriculturists. Vast areas go out of cultivation, at least temporarily, and the whole normal trade is upset.

(vii) Famine-stricken areas are deserted and people take to animals wandering in search of food, as happened in case of 1783 famine in Northern India, Rajputana famine of 1868-1870 and famine of 1876-1878. This wandering reduces labour efficiency by lowering vitality.

Famines in Retrospect—Famines in the Hindu Period

India is proverbially the land of famines. They have occurred in Hindu, Muslim and British periods. During the Hindu period of her history, India did not enjoy absolute immunity from famines, but they were exceptional occurrences. When they did occur, adequate relief measures were undertaken by the state.¹ Chanakya mentions the following among other remedial and relief measures :—

- (i) remission, (ii) emigration, (iii) the granting of money and grain from the State funds, (iv) construction of artificial lakes, tanks, wells, etc., (v) the importation of grain from other places.

In the tenth century A. D. in Kashmir in the year 917-8 we learn from Kalhan's *Rajatarangini* of miseries that we had experienced in the country. We are told, "that one could scarcely see the water in the Jhelum, entirely covered as the river was with corpses soaked and swollen by water in which they had long been lying. The land, densely covered with bones in all directions became a burial ground, causing terror to beings. The king's ministers and Tantrins (Guards) became wealthy, as they amassed riches selling stores of rice at high prices. The king would take that person as minister who raised the sums due on the Tantrins' bills by selling the subjects in such a condition."

In 650 A. D. famine raged throughout the country. After that a series of famines occurred in 941, 1022 and 1033, when some of the provinces were depopulated, and men were driven to cannibalism. From 1148 to 1159, there was almost a continuous famine in different parts of the country. The historians of Mohamedan period have left records of several famines, four of which were very severe. The first occurred in 1343, when Mohammad Tughlak "ordered provisions for six months to be distributed to all the popu-

1. According to Kautilya's *Arthashastra*, during famine the king's duty shall be to show favour to his people by providing them with seeds and provisions. He may either do such works as are usually resorted to in calamities, he may show favour by distributing either his own collection of provisions or the hoarded income of the rich among the people or seek for help from his friends among kings; or the policy of thinning the rich by extracting excessive revenue, or causing them to vomit their accumulated wealth may be resorted to.

lation of Delhi ; and made advances for the cultivation of land and for digging of wells.¹ During this famine towns and districts were depopulated and people were reduced to eat unnatural food such as cooked hides, human flesh and drinking of blood of slaughtered cattle. During the reign of Akbar, "there was a scarcity of rain throughout the whole of Hindustan, and a fearful famine raged continuously for three or four years. The Emperor ordered alms to be distributed in all the cities, Nawab Sheikh Farid Bokhari being ordered to superintend and control their distribution and give all aid in his power to relieve the general distress of the people."² The fifth year of the reign of Shah Jahan (1630) witnessed one of the greatest famines recorded in history. It afflicted almost the whole of India, and, in spite of the vigorous measures of relief adopted the distribution of Rs. 5,000 on every Monday to the deserving poor, and of Rs. 50,000 in Ahmedabad where the famine was more severe ; and the food was doled out and taxes to the tune of Rs 70 lakhs were remitted by the Emperor, a prodigious mortality ensued. There was another great famine in the reign of Aurangzeb in 1686 in Deccan James. Mills writes thus of the measures adopted to cope with this calamity : "The prudence of Aurangzeb, if his preceding actions will not permit us to call it his humanity, suggested to him the utmost limit of beneficence for this calamitous occasion. The rents of the husbandmen, and other taxes, were remitted. The treasury of the Emperor was opened without limit, corn was brought in the province where the produce was best, conveyed to those in which it was most defective and distributed to the people at reduced prices." Of Sultan Mahmud, we are told that he kept a train of ten thousand bullocks on his account, constantly moving to and from Malwa and Gujerat for grain, to supply his stricken kingdom of Bahamani.

Famines under East India Company

Under the E. I. Co., "India suffered in one part or other, from 12 famines and four severe scarcities."³ The first of these was the dreadful calamity of 1630, ' by which more than a third of population of Gujerat were computed to have been destroyed, and whole cities and districts were left bare of inhabitants." Sir W. Hunter speaks of this famine thus, "Living persons could hardly be seen but the corpse- at the corner of the streets of Surat lay twenty together, nobody burying them. Thirty thousand had perished in the town alone. Pestilence followed famine. Most of the people wandered out of their villages with their cattle and died by the way. They sold themselves as slaves and practised cannibalism. Life was offered for a loaf but none would buy, rank was

1 Elliot, *History of India*.

2 Dawson, *History of India*.

3 *Report of the Famine Commission*, 1910, p. 1.

to be sold for cake but none cared for it, the overbounteous hand was stretched up to beg for food, the feet which had always trodden the way of contentment walked about in search of sustenance."

The greatest famine of this period occurred in 1770. We are told about this famine by Sir Hunter that, "All through the stifling summer of 1770 people went on dying. The husbandmen sold away their cattle, they sold their implements of agriculture, they devoured their seed grains, they sold their sons and daughters till at length no buyer of children could be found, they ate leaves of trees and the grass of the field, and in June 1770 the Resident at the Darbar affirmed that the living persons were feeding on the dead. Day and night a torrent of famished and disease-stricken wretches poured into great cities, at an early period of the year pestilence had broken out. The streets were blocked up with promiscuous heaps of the dying and the dead. Interment could not do its work quick enough, even the dogs and jackals, the public scavengers of the East, became unable to accomplish their removing work, and the multitude of mangled and festering corpses at length threatened the existence of the citizens." Although signals of impending disaster had been received in 1769 nothing had been done to check the famine, and even when distress became acute no relief measures on an adequate scale were adopted.¹ In this famine about 10 millions died.

In Madras, 1781 and 1782 were years of severe scarcity; and in 1784 a severe famine devastated the whole of Northern India. A drought in Madras and Hyderabad in 1791 was followed by intense famine in 1792. It was on this occasion that relief works were first adopted by the Madras Government for the support of the famine-stricken. In 1802-03 a failure of rains led to famine in Bombay and scarcity in Madras, which were followed the next year by a widely extended famine in N.-W. Provinces and Oudh. The measures adopted on this occasion consisted in making remissions of the revenue, in giving loans and advances to landowners, offering a bounty on all grain imported into Banaras, Allahabad, Kanpur, and Fatehgarh. In 1806-07 there was a severe scarcity in some districts of Madras.

The next great famine was that of 1833 known as 'Guntur Famine.' It affected the northern districts of Madras, and parts

1 Lord Macaulay in his *Historical Essays*, has also recorded some facts about the famine of 1770 "The Hoogly every day rolled down thousands of corpses close to the porticoes and gardens of the British conquerors. The very streets of Calcutta were blocked up by the dying and the dead. The lean, feeble survivors had not energy enough to bear the bodies of their kindred to the funeral pile or the holy river, or even to scare away the jackals and vultures who fed on human remains in the face of the day. The extent of the mortality we never ascertained, but it was popularly reckoned by millions...one third of the province turned into a jungle inhabited by wild beasts."

of the southern Maratha country and of Mysore and Hyderabad. The severity of the calamity was not recognised by the Government till it was too late, with the result that 200,000 persons died in Guntur out of a population of 500,000. In 1837 there was a severe famine in Upper India, which was estimated to have caused at least 8,000,000 deaths. Relief works were undertaken by the State, the succour of the infirm and the helpless being left to private charity for the most part. The expenditure amounted to 38 lakhs of rupees in 1838, but the results were unsatisfactory for the extremity of suffering endured by the people was such as to leave behind a widespread and lasting recollection of the calamity. In 1854 a severe famine visited northern Madras.

Famines under British Rule

Since the transfer of the administration of India from the Company to the Crown, there have been ten important famines, besides a large number of severe scarcities. The first famine occurred in 1860-61, the chief area affected being that between Delhi and Agra. The total area affected was 53,500 sq. miles with a population of 2 crores and about 1/2 million people deserted the distressed tract. This was the first occasion in British India on which poor-houses were used as means of relief; and it was also the first time when the authorities thought fit to enquire into the causes, area and intensity of the famine, as well as the measures to be adopted to cope with the distress, Col. Baird Smith being placed on deputation for the purpose.

Resulting from an early failure of rains in 1865 and the consequent destruction of the main rice crop due to be harvested in December a famine extended along with the whole of the eastern coast from Calcutta to Madras and penetrated far inland. The districts of Manbhum and Singhbhum in Chhota Nagpur as well as the Ganjam Division in Madras suffered severely. The calamity fell with greatest intensity in Orissa, hence its name, the "Orissa Famine." The Government officers although forewarned, took no steps to meet the approach of the calamity, so that when it came they were absolutely helpless. It was estimated that in spite of an expenditure of Rs. 14½ millions about a million persons died in Orissa famine. It affected 1,80,000 sq. miles and 47½ million people.

A year had hardly elapsed before Northern and Central India were visited by one of the most widespread and grievous famines on record in 1868 and 1870. The conditions were the worst in Rajputana and Central India where there was an entire loss of crops as well as of the fodder and grass, besides a dearth of water; and to add to the miseries of the people, an epidemic of cholera broke out and spread in all directions. Prompt actions

were taken by the Government to relieve distress, but the relief given was hardly commensurate with the magnitude of the distress and although £ 6½ millions were spent yet there was a considerable loss of life. It affected 296,000 sq. miles and about 44½ million people. The most peculiar feature of this famine was that 1 million migrated from Marwar to the neighbouring areas, and exceptionally large cattle mortality and the scarcity of food.

In 1873, Bihar, parts of Bengal and eastern districts of U. P. were afflicted with a famine. It affected an area of 54,000 sq. miles with a population of 215 lakhs. The Bengal Government took prompt action and carried out relief measures on a scale and with a thoroughness which had never been equalled before. The total cost of the relief measures amounted to nearly 10 crores of rupees. The importance of this famine lay in a new incentive towards greater administrative efficiency and in initiation of a famine insurance scheme proposed by Sir John Strachey.

The great famine of 1876-78 was, in respect of the area and population affected (2,57,000 sq miles and 58½ lakh people), as well as the duration and intensity of the distress, the most grievous calamity experienced since the beginning of the 19th century.¹ It affected Madras, Bombay, U. P., parts of C. P. and the Punjab. The relief measures on this occasion were insufficient and imperfectly organised, as the imports of grains on Government account was given up and trade entirely left to private bodies who did not supply corn to the outlying districts. The Government refused to recognise their responsibility for saving human lives, and declared with cynical coldness that, "the task of saving life, irrespective of cost, is one which is beyond their power to undertake, and that in the interests of the distressed population itself, as well as of the taxpayers generally, the Government of India was bound to adopt precaution against indolence or imposition." Small wonder that a fearful mortality of 5½ millions in British territories only was the result of the adoption of such a policy which spent Rs. 8½ crores.

Between 1878 and 1896 there were two famines and five scarcities all of them of a more or less local character. The greatest famine of 1896-97 affected almost every province about 3 07,000 sq. miles and 69½ million people. In addition to the opening of the public works at various centres gratuitous relief was given extensively, and in many parts of the country people were relieved in their own homes. A loss of 18 to 19 million tons of corn was estimated and the number relieved were more than 4 million. On an average 2 million people were relieved daily during one year from October 1896 to September 1897. Cost of relief

¹ *The Imperial Gazetteer of India*, Vol. II, p. 518.

was Rs. 7 27 crores, the revenue remitted was $1\frac{1}{2}$ crores, loans given amounted to $1\frac{3}{4}$ crores and charitable relief by private sources amounted to Rs. $1\frac{3}{4}$ crores, of which $1\frac{1}{2}$ crores were subscribed in the U. K. The famine mortality was 7,50,000. The experiences of this famine were examined by the Lyall Commission.

Following closely upon this came another calamity of the severest type, *viz.*, the famine 1899-1900. The area and population affected were roughly 4,75,000 sq. miles and 69 million people in C. P. Berar, Bombay, Ajmer and West Punjab, Rajputana, M. B., Hyderabad and Baroda. This famine was the result of insufficient rains leading to a great fodder famine and terrible mortality among the cattle. The authorities failed, and in some cases, refused to open relief works in the early stages of the famine; and when they opened such large numbers came on that the system completely broke down in many cases. In the height of this famine there were for weeks together over 6 million persons in receipt of relief and the agricultural production fell to £ 60 millions below the average. The total expenditure amounted to Rs. 10 crores and the excess of mortality over the normal was 1,236, 655. A large number of people from Marwar migrated to M. B. The experiences of this famine were examined by Macdonnel Commission.

Several famines and scarcities of a local character occurred after 1900; those of 1906-07 and 1907-08 being the most important. The first occurred in U. P. due to failure of rains and Bundelkhand in 1906 due to poor harvests; and the failure of monsoons in 1907 gave rise to a severe famine which continued until a good autumn crop was harvested in 1908. In 1913-14 famine broke out in U. P. in the Jhansi Division of Rohilkhand and in parts of Agra and Allahabad Divisions. The rains failed more seriously and over a wider area than during any monsoon in the recent history of India. The resisting power of the people had developed to such an extent that not more than 6 millions were in receipt of public assistance at any time. *Takavis* were given, industrial and public works provided alternative employment for labour, wages had risen and the resisting power of the people increased. Large masses of people migrated to Assam, Ceylon, Malaya, West Indies, Fiji, Natal and Mauritius.

In 1920-21 a famine visited Madras, M. P., Bombay and parts of the Punjab, M. B. and Bengal but the largest number of people on relief was very much less than 3% of the total population affected (*i.e.*, 45 million). Thus as Mrs. Knowles puts it, "With a population more mobile, better fed, and with increased capacity for self-help, with great demand for labour in factories, mines and plantations, and with a well-organised system of railways and extensive irrigation works, it is expected that the famines of the

past will not recur again with such devastating effects. The British Government in India has famines by the throat."¹

Bengal Famine of 1943

But these expectations were frustrated. The famine of 1943 is on all hands acknowledged to be one of the worst calamities this country has faced in recent times. Following in the wake of the surrender of Burma early in 1942 thousands of refugees poured into Bengal and parts of Orissa and added to the already strained resources of the country. The removal of foodgrains from the danger zone in Bengal and the destruction and removal of boats dislocated the internal structure in the history of Bengal which destroyed over 15,000 people and nearly 100,000 heads of cattle. Several thousands of human habitations were ruined, many square miles of pastures and fields were rendered unfit for cultivation. The nightmare of shortage of rice consequent upon the fall of Burma naturally led to the worst apprehensions being held by the people of the land. The food shortage and the consequent miseries and famine conditions began to be prevalent in the land in some measure or other from the very beginning of the year 1943. In many famine-stricken areas rice prices were beyond the reach of the people because of the action of the speculators or because of hoarding. In many places within a few weeks of December harvest of 1942 the price of rice shot up.² Large supplies were not readily available owing to the general dislocation of the Indian grain markets. There was also congestion in railways and hence foodgrains could not be moved quickly to Bengal.

As usual, there had been a gross under-estimation of deaths and sufferings of the people for as Mr. Amery announced that about a million people might have been destroyed. But it has been stated that on a conservative estimate, the number of weekly deaths in Bengal alone could not have been less than 50,000 per week. According to the sample survey of the ten affected districts of Bengal carried out by the Anthropology Department of the Calcutta University, "the probable total number of deaths above the normal comes to well over 3½ millions. Besides this the lingering death of semi-starvation and sufferings from disease had also been of severest character. In the wave of famine came not only suicide, but also pestilence like cholera, malaria, plague and demoralization." According to General Stuart (Officer Commanding Military Forces in Bengal), "Malnutrition, coupled with

1 Knowles : *Economic Development of British Overseas Empire*, Part I.

2 Wholesale Prices of Rice (in Rs. per Maund)

Name of Market	Quality	1939-40	1940-41	1941-42	1942-43	Highest quoted (Aug. 43)
Calcutta	'K alma'	Rs. 4-5-9	5-8-0	6-1-0	17-13-6	34-8-0

advent of the cold weather and shortage of personal clothing and blankets, had made a large percentage of the poorer classes easy victim of malaria, cholera and pneumonia . . .” This distress in the out of the way villages on the banks of Brahmaputra river was acute. Mr. J. K. Mitter (the then President of the Bengal National Chamber of Commerce) remarked, “The second city of British Empire is now the haunting ground of starving and half-naked persons. By all tokens conditions in the mufussil was far worse than in Calcutta. People being too poor to perform the last rites for their dearly loved ones had to simply throw the corpses into the rivers and *nalas*. Many beautiful rivers, revulets and streams of Bengal carried upon their bosoms hundreds of people who died of starvation and diseases. Rich repasts had been afforded to jackals and vultures. Many a fair field had become disfigured with rotting corpses and grinning skulls.” Not only this, sale of children and even grown-ups came to be reported. According to the United Press from Netrakona in Bengal there was a regular malpractice of selling destitute girls aged 3 to 13 in the local prostitute quarters. The prostitutes purchased the girls, at rates ranging from annas ten to Rs. 1/8 each. The pangs of hunger were so great that in a number of instances women were reduced to such lowest state of degradation as to sell their bodies to get a single meal. The position became very bad, people lost the buying power, were utterly debilitated of health and a vast army of widows, guardianless young girls and orphan children were rendered helpless. Economic circumstances forced women young and old to prostitution (for the sake of a meal) and created a disastrous state of affairs for the womanhood of the country. Many peasant families were uprooted from their homes in Bengal and were forced to sell all their belongings and reduced to beggary.

In order to meet the starvation in Bengal, a number of relief kitchens were started. According to Government figures, there were 5442 relief kitchens of which 3,621 were run by the Government, 1247 were subsidised, while 547 were private kitchens established in Calcutta. This number was quite inadequate. The food that was given at these kitchens was a watery gruel of rice, dal and bajra and satisfied only half the requirements of one meal. Moreover, these kitchens afforded relief only once a day. According to Bombay Chronicle, “the relief kitchen was not an institution that saved people, it only staved off the days of death. It was but a stepping-stone towards the burning ghat.”

The 1943 famine cost the Government of Bengal 11.50 crores of rupees. Out of this Rs. 5 crores were spent on measures, such as the distribution of gratuitous relief, clothes and garments, and the establishment of free kitchens. More than Rs. 2 crores

was distributed as loans to distressed people while the much-needed medical relief cost Rs. 50 lakhs. The loss incurred by Government by selling foodgrains at cheap rates amounted to over Rs. 4 crores.

The Woodhead Commission of 1944 was appointed to go into the causes responsible for this situation. It made certain recommendations, chief of which were : (1) Rationing should be forthwith introduced in the town with a population of about 25,000 or more; (2) Government policy should be more strict in granting licences to dealers in grain ; (3) Government should popularise the 'Grow More Food campaign', (4) Cultivators possessing land exceeding a prescribed limit should be brought within the scope of the foodgrains control order. A limit of 25 acres was the maximum limit suggested; and (5) Embargoes round about the surplus districts must be effectively enforced.

In 1943 there was also a famine in Bijapur district of Bombay and in parts of Madras ; but Bengal conditions did not approach in any of these places. Again in 1946 scarcity areas were notified in Bombay and Madras and relief centres were opened. Scarcity conditions also prevailed in 1948 in Gujarat and in 1949-50 and 1950-51 in Eastern U. P. Bihar, Bengal and Madras and 1951-52 in Madras, Punjab, M. P. and Saurashtra. But none of them was so serious as that of Bengal. The droughts, failure of monsoon and other natural calamities have brought about famine or near famine conditions in a thousand-mile belt covering Gujarat, Saurashtra to Hissar and including Rajasthan, parts of Bihar, Eastern U. P., certain districts of West Bengal and Madras as well.

Famines are Recurring Calamities in India

From the above sketch it would be evident that famines are frequently recurring calamities in India. It was estimated by the Famine Commission of 1880 that on an average, there are two bad seasons to seven good, and one-twelfth of the population may be approximately taken as the portion affected by each famine. Some provinces are more liable to these calamities than others, but hardly a year passes in which some part or other of the country does not in some degree, suffer from a famine or scarcity. The more important famines come at irregular intervals, though not without warning. It should be remembered that the vast size and the varying altitudes of the country do not allow a famine to envelop the whole of the country and be more terrible. As Loveday says, "History gives no example of a drought extending over the whole of India ; and metereologists declare such an event impossible."

Signals of Famine's Approach

The first signal of an approaching famine is a failure of rains followed by failure of crops. Prices rise high, and the less efficient among the labourers finding no employment swell the ranks of beggars. At the same time there is a contraction of credit and private charity. Theft and robbery increase, and a general restlessness is visible among the people due to widespread unemployment and lack of food supply. There is also a deterioration in the health of the people, which often leads to epidemics of a serious kind resulting in a very heavy death role.

Famine Relief Measures

The chief problems of famine relief are : the supply and distribution of food for different types of men and women involving the problem of regulation of trade and export in grain, the supply of drinking water, the problem of saving the cattle and the fodder supply. The provision of medicines, the grant of takavi loans for the relief of those who cannot come to test works and poor houses opened for the relief of the poor, the remission of the land tax and administration of railways and canals, the maintenance of balance between economy, generosity, and promptness, the method of payment for the work done and the restarting of agricultural life by making arrangements for the supply of seed and cheap credit.

In olden days the great Moghuls and Hindu rulers constructed canals (*e.g.*, Jumna canal and Cauvery delta system) and tanks to provide irrigation facilities to protect land against drought and the doles of grain were given to feed the people and cattle when importation of food was delayed. Relief measures consisted of the distribution of charities, establishment of alms-houses, free distribution of seed or sale of corn by government depots and remission of taxes and rents. The East India Company distributed charitable relief, prohibited the export of grain on its own account and on account of great difficulties of transport very large number of lives were lost.

The system of modern relief organisation was formulated for the first time in the year 1860. The germs of the modern famine codes were laid in that year. Since 1865 the Government adopted a forward policy of famine prevention and famine relief. As a result of an enquiry presided over by Sir John Campbell the Government declared that its definite policy was to save life. This led to an indiscriminate charity in subsequent years. In 1878 was introduced the scheme of Famine Insurance grant by which a sum of Rs. 1½ crores was provided in the annual budget of the Government of India to be spent on direct relief if there was a famine. With a view to form a permanent fund for relief the Jaipur Maharaja donated in 1900 a sum of Rs. 15 lakhs in Government

securities to be held in trust for relief in times of general distress. Now after the transference of the U. P. Orphans Fund this amount has increased to Rs. 4278 lakhs and is officially known as the *Indian Peoples' Famine Trust*.

The Famine Codes

The recommendation of the Strachy Commission in 1880 led to the formation of provincial famine codes in 1883, which differing in minor details agree in all essential matters. They prescribe the precautionary or preparatory arrangement to be permanently maintained in ordinary times, and the steps to be taken when the information received shows the imminence or scarcity of famine. They also lay down the duties of all officers concerned when famine or scarcity is actually present, and the various measures of relief to be adopted.

As soon as the local Government are able to read the first signals of an approaching famine or scarcity, it is their duty to take the necessary steps for meeting it. The Famine Commissions recommended a plan of work which may be briefly described thus : During the first stage (i) liberal advances should be given for the construction of temporary, and repair of permanent wells and for other village improvements, (ii) non-official co-operation should be enlisted and the organisation of public charity should be vigorously taken in hand, (iii) liberal advances should be given for the purchase of seed for the ensuing crops, (iv) the police should be supplied with funds to relieve wanderers in distress, (v) test works should be started and poor-houses should be opened at the chief centres of population, (vi) enquiries, as to suspension of revenue should be given, (vii) relief circles should be organised and the necessary inspection should be made, (viii) preliminary lists should be drawn up of persons eligible for gratuitous relief, (ix) if there are threatenings of a scarcity of fodder or drinking water, steps should be taken to meet them and to encourage private enterprise to import fodder and to develop the water supply.

The object of the test works is, "not to relieve famine but to test the presence of it ; not to relieve hunger but to find out whether people are hungry." Directly the numbers attending test works indicate that further relief measures are necessary, test works should be converted into relief works, which are the backbone of famine relief administration. All who apply and are capable of working should be admitted to relief works and tasks and wages should be given according to physical requirements. The fundamental principle of famine wage is that "the lowest amount sufficient to maintain health" should be given. Relief works would be of two kinds, public works and village works. The former would

be works under the control of the Public Works Department and would engage large number of people. The latter would be under the revenue authorities and would be local works of use to a particular village or group of villages.

The distribution of gratuitous relief should be given when test works are converted into relief works; and care should be taken to see that all persons entitled by the code to receive it are brought up on the list. These are persons having no relatives able and bound to support them, who are incapacitated by physical infirmity, or by their presence at home being necessary to attend on sick or infant children, from earning a subsistence on relief works.

Poor houses also should be started at all convenient places for the reception of persons unfit to work, who either have no homes or cannot conveniently be sent to their homes, and of persons in need of relief who, though fit, refuse to labour.

Of the minor measures of relief, the most important is that of kitchen, intended mainly for the dependants of persons engaged on the relief works. The other measures are gratuities or semi-gratuities relief to *pardastin* women, respectable men, artisans, weavers and temporary orphanages.

Before the rains break, and in time for the prudent use of the money, large takavi advances should be given for cattle and seed, and charitable fund donations should be distributed. At the beginning of the monsoons people may be induced to leave the relief works, provided the necessary pressure is used with the greatest caution and safeguarded by a large extension of gratuitous relief. After the necessity for State relief has completely ceased with the growth of new crops, all relief operations should be closed. The rules recommended by the several Famine Commissions and embodied in the famine codes leave little to be desired. But in practice the success of operations depends very largely on the foresight, energy and sympathy of the executive officers of the Government. In this connection three things are necessary to be borne in mind. First, it is desirable to take steps for warding off a calamity, if possible, secondly that it is ultimately economical to start relief operations early, and thirdly, that for preventing loss of life and preserving the health and strength of the people, relief ought to be given more liberally.

CHAPTER 8

IRRIGATION

Introduction

The success, however, of agriculture depends in a very large measure *inter alia* upon adequate and regular water supply. There are many reasons why the cultivation of land in this country is not as efficient comparatively and as product per unit of land cultivated or labour employed as in other countries, notwithstanding certain advantages of soil and climate. Amongst these, the scarcity, uncertainty or irregularity of water supply may easily rank the highest. The main source of our water supply needed for agriculture is, of course, the annual rainfall. Thanks to the wonderful working of nature rains come to water the parched lands on more or less fixed date so as to facilitate the several stages of agricultural operations and nicely dovetail them one into another.

Necessity of Irrigation in India

(i) The rainfall, though on the whole abundant, often fails, on an average once in a decade, *e.g.*, the normal annual rainfall varies from 460 inches at Cherrapunji in the Assam Hills to less than 10" in western Rajputana.¹ This shows that not only is the rainfall² inadequate but it is also unequally distributed throughout the seasons. By far the largest portion of rain in the country (except south-east of peninsula) falls between June and October. During the rest of the year it is very little. It is because of this tendency of rainfall and its liability to failure that before the era of railways and canals "ghastly famines ravaged the country periodically and scarcity was the common lot of the people over large areas in many years."¹ Thus the water is not available precisely as and when it is required though in the same season it may be in excess in some parts and deficit in others. Where it is in excess it causes heavy floods which damage the land or standing crops; where it is deficient it creates conditions of scarcity bordering upon or eventuating in a famine. Successful cultivation cannot be assured for any considerable period unless facilities are available for watering crops artificially when necessary. (It was because of the realisation of the supreme importance of irrigation that in India it has been practised from times immemorial, to supplement and conserve the rainfall by construction of wells and storage reservoirs, and by bunding streams.²)

¹ Bernard Darley, *Economic Problems of Modern India*, Vol. I, p. 148.

² *Report of Royal Commission on Agriculture*, p. 325.

(ii) *Some crops require more water.* Besides some crops like rice, and sugarcane require a regular and abundant water supply which is rarely provided except in the most favoured regions. The intensive cultivation of land under the pressure of increasing population has made second or winter crop necessary and this requires artificial supply of water in the absence of winter rains.

(iii) *Earlier Cessation of Rainy Season.* In some years the rainy season ends earlier when agriculture requires more water. So if crops are not watered, India has to face the terrible famines which cause untold miseries and hardships to the population. So in order to overcome these chronic droughts irrigation is necessary.

Geographical Factors favouring Irrigation

There are certain geographical factors which have led to the development of irrigation in India. They are :

(1) the rivers rising in the Himalayas are perennial, as they have their courses in perpetual snows of the Himalayas, which give them constant supply of water.

(2) the slope of the plains is so gradual that the canals which are taken out in the upper courses of the rivers can easily irrigate the land in the lower valley.

(3) there is utter absence of the rocky ground in the northern plains and this enables the easy cutting of the canals.

(4) the soil is fertile which makes the greatest use of irrigation and;

(5) the clay in the sub-soil is deep which acts as reservoir for the rain water which sinks through the porous alluvium of the plains and which is later tapped by wells.

Methods of supplying Water to the Crops

The geographical factors have determined the predominance of a particular kind of irrigation method in the particular region of the country. Any one method of irrigation is not suitable for every kind of soil, e.g., the alluvial tract is specially suitable for canals and wells; in the crystalline tracts irrigation from tanks is most extensive and in the Deccan tract a considerable area is cultivated under wells. The sources of irrigation are partly natural such as rivers, creeks, lakes and swamps, and partly artificial such as canals, drainage channels, tanks and wells. The artificial application of water to crops is carried out either directly from flowing water in rivers and rivulets or by storage of flood waters or rain waters or from supplies available underground. The main sources of irrigation, as found in India are : wells, tanks and reservoirs, and canals. All these sources irrigate 53.6 million acres of the Indian soil, i.e., 17 per cent of the area under cultiva-

tion is irrigated by major and minor works, the rest being dependent on rainfall.

The following table shows the quinquennial averages of areas cultivated and irrigated in the States of Undivided India during the last half century.¹

Average for five years	Total ar cultivat	Area irrigated (by Govt. works)	Total area irrigated
(In Million Acres)			
1896—1900	179·6	16·0	29·6
1901—1905	192·9	18·6	32·5
1906—1910	204·5	21·2	39·4
1911—1915	207·7	23·5	44·5
1916—1920	203·9	25·9	46·5
1921—1925	208·4	25·8	46·0
1926—1930	209·4	27·2	46·8
1931—1935	210·0	28·1	48·8
1936—1940	212·0	30·5	54·5
1941—1945	216·0	33·6	58·1
1949—1950	321·3	19·7	49·7
1951—1952	329·2	21·5	52·0
1953—1954	351·7	21·9	53·7

The following table gives the area under irrigation source-wise, since Independence :—

Year	State	From canals		Tanks	Wells	Other sources	Total
		Private	Total				
(In Thousand Acres)							
1947-48	15,312	4,448	19,760	7,991	12,525	6,368	46,644
1948-49	15,929	4,524	20,453	7,658	12,634	6,171	46,925
1949-50	16,934	2,864	19,798	8,486	13,735	7,935	49,906
1950-51	17,938	2,817	20,755	8,288	14,695	7,601	51,399
1951-52	18,530	2,671	21,201	8,626	15,947	5,650	51,466
1952-53	18,918	3,229	22,147	7,873	16,014	5,717	51,751
1953-54	18,783	3,196	21,979	10,188	16,444	5,083	53,694

It will thus be observed that of the total irrigated area, canals irrigate 42 per cent, tanks, 15 per cent, wells 30 per cent and other sources 13 per cent. Of the total irrigated area about 41 per cent is under rice ; 15 per cent under wheat, 24 per cent under other cereals and pulses ; 6 per cent under sugarcane ; 2 per cent under cotton and the rest under other crops.

The area under irrigation in India is thus the largest than the area irrigated in any other country of the world, two and a half times the area irrigated in U. S. A. ; and it exceeds the combined acreage under irrigation in U. S. A. ; U. S. S. R., Japan ; Italy ; Egypt and Mexico. These five countries between them

¹ *First Five Year Plan*, p. 344 and *Agricultural Statistics of Reorganised States* 1956 p. 34.

occupy roughly ten times the area of the Indian Union. Even then in a country like India the acreage under irrigation is very inadequate. We have only 17 per cent of the land under irrigation, as against 55 per cent in Japan; 48 per cent in Pakistan; 46 per cent in China; 30 per cent each in Indonesia and Malaya.¹

The following table gives the area under irrigation and their proportion to the cultivated areas in the States. It will be gathered from this table that in the Punjab, Pepsu, Jammu and Kashmir and Ajmer the proportion of the irrigated to the cultivated area is above 40 per cent while in Saurashtra, Bhopal and Coorg it is below 5 per cent.²

States	Irrigated area (in thousand acres)		Percentage of irrigated to Cultivated area	
	Net	Gross	Net	Gross
Andhra	4588	5046	30.3	29.1
Assam	1339	1339	24.4	21.2
Bihar	4896	4913	23.0	17.7
Bombay	2372	2624	5.7	6.4
Madhya Pradesh	1782	1782	6.0	5.4
Madras	4384	5556	28.6	31.2
Orissa	1935	2109	13.6	14.0
Punjab	5068	5844	43.2	42.1
Uttar Pradesh	12760	13975	31.4	28.4
West Bengal	2620	2708	21.6	19.3
Hyderabad	1438	1568	5.2	5.7
Jammu and Kashmir	683	709	42.7	40.5
Madhya Bharat	586	628	5.1	5.2
Mysore	1049	1027	—	—
Pepsu	2055	2206	47.7	44.1
Rajasthan	2427	2834	10.7	11.9
Saurashtra	189	189	2.6	2.6
Travancore-Cochin	921	1034	32.6	31.2
Ajmer	144	174	40.5	40.5
Bhopal	22	23	1.3	1.3
Coorg	9	9	4.9	4.9
Delhi	38	38	38.8	38.6
Goa	153	153	15.7	15.7
Karnataka	84.2	84.2	7.6	10.9
Kerala	216.2	220	4.6	4.6
Madhya Pradesh	175	175	17.5	16.9

¹ United Asia Food Supplement, 1950, p. 158.
² India, 1956, p. 158.

Advantages of Wells

Well irrigation has definite advantages of its own because :

(i) Well water entails trouble on the part of the cultivator for raising it from varying depths, he is naturally careful and economical in its use. Due to the high cost of lifting water from the wells, it is necessarily used for high grade crops. Its *pro rata* burden is consequently reduced and benefit increased. Irrigation from the wells is useful as the water is rich in soda, nitrates, chlorides and sulphates which make the land more fertile. Moreover, there is no danger of water-logging as in the case of canal irrigation.

(ii) Well is very well suited to the poor Indian farmer, because it is cheap to build, requires no elaborate machinery to work it, and does not need any specialised engineering skill to build it or to work it. It can be dug at the very door of the farmer, if necessary. Well digging needs no elaborate survey of levels as is necessary for canal construction.

(iii) Apart from this economic consideration, well irrigation is suited to a large part of India on geographical consideration also. Over a large part of the country the soil consists of a sandy loam underlain here and there by isolated beds of clay, which appear floating in a sea of sand that is highly saturated with moisture that percolates through the soil. These clay beds act as reservoirs which when tapped by digging, supply large quantities of water which can be easily lifted to the surface.

The wells get their water supply from the local rainfall; slow seepage from the land lying at the base of the mountains, or Tarai where the rainfall is higher; seepage from canals and canal-irrigated lands and seepage from other water bodies.

Limitations of Wells

But well irrigation in India is limited by :

(i) In certain areas the water level is too low, specially in the neighbourhood of rivers. The districts in which the rainfall is very heavy usually have a high water table and the water is very near the surface. In other districts, where the rainfall is limited water table is low and the wells have to be very deep.

(ii) Often the well water is brackish, this brackish water is useless for irrigation as it destroys the crop.

(iii) A large number of ordinary wells dry up during periods of drought when their water is needed most. They also dry up after a few hours of excessive lifting of water, and are therefore unable to irrigate large areas.

1. Well Irrigation

Well irrigation is the most important and most indigenous form of irrigation in India. The types of wells in use differ according to the geological formation. Common in the Peninsula are the so-called fissure wells sunk deep into the rock in order to strike a water-bearing fissure. Certain dry river beds have a good water supply some ten to twelve feet below; sand filter wells are dug out in the sand riveted with concrete rings or by a coal tar barrel with side perforations and the top and bottom removed. These wells can supply forty to fifty thousand gallons of clean water. The wells are mainly of two types—*kutchra* or *pacca* wells varying from mere holes dug into the ground to wide and deep elaborate masonry structure or tubes which allow pumps to be installed and have a continuous supply throughout the years, capable of irrigating up to two acres.

Methods of Lifting Water

The lifting of water on a small scale from wells in tracts with a rather low water table is done by the *mot* or leather bucket, (also known as *charsa*, *pur*, *laos*, *kabalar*, (South India), *purwali* or *charkhi* in case an earthen pot is used. The *mot* (made of leather) on an average can irrigate from a quarter of one-third of an acre of land per day depending upon the depth of the well and on how many pairs of bullocks are employed, the size of the bucket and the distance of the well from the field. The self-delivery *charsa* commonly used in Western India, works up to a depth of about 30 feet and saves the labour of man.

Persian wheel is quite common in tracts where the water table is 30 feet or less and also very useful in raising water from tanks, channels and rivulets in Rajasthan, Punjab, Saurashtra, and Bombay. The Persian wheels are generally actuated by draft animals, and a man is required to operate it. They irrigate 8 to 10 acres according to the depth of the water, the area controlled per day being about half an acre.

The *denkhali* system is a crude contrivance for raising water. It consists of a long pole working on a post and weighted commonly with compact mass of mud at one end and a bucket attached by a long rope to the other end. The water is raised in small quantities and the process is very weary and monotonous. This system is employed in places where permanent wells cannot be sunk due to sandy strata and where temporary wells of not more than ten feet in depth are used. The arrangement is called *lat* in Upper India or *pikottah* in the south. This method is found on the river side and throughout the country during summer for

irrigating cash crops and vegetables. It can irrigate about 1/8th of an acre per day.

Well irrigation is of considerable importance in (i) that part of the Gangetic valley which is in close proximity to the north-eastern and eastern extension of the Deccan tableland. This includes the eastern part of U. P., Southern Bihar and Western Bengal. "In fact the whole of the area, from Banaras to Delhi is drilled like a sieve with wells of fifteen feet depth." (ii) Regions of the black cotton soil specially where it is deep; (iii) the submontane regions on the eastern side of the Western Ghats including the southern districts of Bombay, and Madras especially Coimbatore, Madura, and Ramnad, (iv) the submontane districts of the Punjab.

The regions immediately in the neighbourhood of the Himalayas, the Assam and Arakan Hills, and to the west of Western Ghats are particularly deficient in well irrigation.

Well irrigation accounts for well over one-fourth of the total irrigated area in India. The most important States in order of importance are U. P., the Punjab, Madras, Bombay. Even in canal-commanded area well irrigation is practised in elevated parts where the canal water cannot reach.]

There is still much scope for the expansion of well irrigation in India. The Royal Commission on Agriculture suggested that every effort should be made to encourage the formation of co-operative societies for construction of wells. As early as 1903 the Indian Irrigation Commission maintained that there was no single State in India in which irrigation from well might not be very largely extended with advantage and that in areas where subsoil water lies close to the surface of the soil, well irrigation is actually preferable to canal irrigation. Considerable official encouragement has now begun to be given to the construction of wells under the Grow More Food Campaign. The Famine Enquiry Commission had recommended that the State should encourage the development of private wells by : (i) the collection of full information as regards subsoil water supply, (ii) the appointment of a special staff charged with the duty of advising and assisting the villager in the sinking of wells, (iii) the grant of takavi loans more liberally, and (iv) the introduction of more efficient means of lifting water especially in tracts with a deep water table.¹

Tube-wells

Tube-wells are comparatively of recent development in India. Technical advice and assistance are given by the Government

¹ *Famine Enquiry Commission Final Report*, p. 135-36.

department for their installation, for moderate fees. Four conditions are, in general, essential for the success of a tube-well irrigation, viz. :¹

(i) The flow of water in the subsoil must be adequate to meet the surface demands, thus ensuring a stable water table,

(ii) the depth of this water table below the ground level must not ordinarily exceed about 50 feet,

(iii) the irrigation demand must prevail over a wide tract for an average period of not less than 3000 hours in a year, and

(iv) electric power must be available over the tract in question at a rate not exceeding half an anna per unit.

The use of tube-wells and power-driven plants for irrigation purposes have been of recent origin in India. These wells have an advantage over canal in that the water can be taken directly at the places required and the flow on the spot takes place by gravity. The area that may be irrigated from such a well is a variable factor and depends upon climate, crop and soil conditions but an average tube-well can irrigate at least 120 acres of sugarcane and 300 acres of *rab*i crops.

A beginning was made in the construction of tube-wells in U. P. and Bihar in 1930 and by 1950, nearly 2,500 such wells had been constructed. As a part of the G. M. F. Campaign, the Central Government adopted a scheme in 1950 for the construction of 965 tube-wells out of which 440 were to be in U. P. 300 in Bihar and 225 in the Punjab. By the end of January 1954, 938 of these tube-wells were constructed. Since then this scheme has been completed.

Another scheme of tube-well construction was started in 1952 under the Indo-American Technical Assistance Programme, under which 2 650 tube-wells in the States of Punjab, U. P., Pepsu and Bihar had to be completed up to end 1955, the number of tube-wells completed was 2,286 under the Technical Assistance Programme and 93 under the G. M. F. Programme. Each tube-well will irrigate 400 acres and produce 60 tons of additional food-grains. There was yet another programme for the construction of 700 tube-wells by 1955-56. The additional irrigated area by 2,650 tube-wells will be about 2 million acres on completion. The present tube-well programme is mostly confined to the alluvial soil of the Punjab, U. P., Pepsu and Bihar. For the uniform development of the country, a programme for the construction of 350 exploratory tube-wells in 16 other States was drawn up and an

¹ *Famine Enquiry Commission Final Report*, p. 133-34.

agreement was signed with the Technical Co-operation Mission on March 27, 1953. Up to the end of March 1955, only 7% of the allotment was utilised for the programme.

The programme for the Second Plan provides for the construction of 3581 tube-wells at an expenditure of Rs. 20 crores, and the irrigation expected therefrom is 916,000 acres. The distribution of these tube-wells by the States is shown below :—

State	No. of tube-wells	Estimated Cost (Rs. Lakhs)	Estimated Area to be Irrigated (000 acres)	Approx. No. of Exploratory Tube-wells Borings
Andhra	25
Assam	...	50	30	15
Bihar	...	150	10	15
Bombay	...	330	150	66
Madhya Pradesh and Bhopal	...	98	70	39
Madras	...	300	75	6
Orissa	...	25	20	7
Punjab	...	466	280	77
Uttar Pradesh	...	1500	1050	480
West Bengal	...	150	100	32
PEPSU	...	292	150	133
Rajasthan	...	50	35	16
Saurashtra	...	70	25	14
Travancore-Cochin
Delhi	...	50	21.5	8
Kutch
Pondicherry	...	50	12.5	3
Other areas
Total	3581	2029	916	350

2. Tank Irrigation

Tanks and embankments are a special feature of the Deccan because : (i) The rivers of the Deccan are not snow-fed and they are solely dependent upon the rain waters. (ii) There are many streams which become torrential during the rainy season but dry up in the season when the rain ceases. (iii) The undulating character of the region together with a rocky bed makes the construction prohibitive. (iv) Moreover, as the hard rocks do not suck up water so wells also cannot be made there. But the tanks can be easily made by means of making dams in hollow spaces in

which rain water is stored in large quantities for distributing a regular supply of water through the channels to the arable lands in the winter season. (v) Lastly, the scattered population of the tract also favours the system of tank irrigation. So this is the only possible and efficacious method by which the abundant rain water can be conserved that would otherwise flow out uselessly into ever-hungry ocean. Tank irrigation has reached its highest perfection in south specially in Madras.

The tank may vary in size. It may be anything from a work like Lake Fife and Whiting in Bombay or Periyar lake in Travancore State to the very small village tank capable of irrigating about 5 acres or even less. The large works are few in number, need considerable technical assistance and require a large expenditure of money to make them reasonably safe against breaches. Government agency alone is, therefore, suited to the construction and maintenance of such works. But there are numerous small units scattered all over the country, the maintenance and repair of which by a Government Department might be said to offer a difficult problem at maintaining village tank repairs. Further it has come to be regarded as an axiom by irrigation engineers that it is less costly in the long run to allow these works to breach every 15 years or so than to go under the expense of preventing breakdown under abnormal conditions. Their upkeep should be entrusted to the village communities concerned who can give the requisite attention in time. This needs the formation of broad policies and the enactment of suitable laws to make the policies effective.

3. Canal Irrigation

Canal irrigation is the most important form of irrigation in India because of its cheapness, and the ease and certainty with which water is supplied. The irrigation canals of Northern India which turn to productive use the water of the Indo-Gangetic system rank amongst the greatest and the most beneficent triumphs of modern engineering in the whole world. The canals in India are of two classes, *viz.*, inundation and perennial.

(i) *Inundation canals.* The inundation canals are drawn directly from the rivers without making any kind of barrage or dam at their head to regulate the flow of the river and the canal. They get water when the river is well flooded and not when the water level of the rivers is low. But as soon as the flood subsides and the water level of the rivers is reduced below the level of the canal-head, these canals dry up. The great defect of these canals is that the water supply is quite uncertain. They provide irrigation mostly during the rainy season. During the dry season when irrigation is needed most of these canals are useless because of their dryness.

(ii) *Perennial canals.* Are those that are constructed by putting some form of barrage across the river which flows throughout the year, and diverting its water by means of a canal to be irrigated. Such canals are independent of the natural level of the water in the river. Within this class falls the canal system of the East Punjab and Uttar Pradesh.

Ways of Charging Water Rates

The charges for irrigation water are levied in different States, e.g., in Madras and Bombay different rates of land revenue are charged according as the land is irrigated or not. The former includes the water rates. In other parts of India, the water rate is a separate charge and is adjusted to the benefit received as near as can be. The area actually irrigated is measured and rate is charged per acre according to the crop grown. By this means the water rate is adjusted to the service rendered. Lower rates are charged where water has to be lifted to a higher level while where the mere flow of water by gravitation irrigates the land the rates are somewhat higher. In some cases the outlets of canals for water are rented for a lump sum, or the charge is made according to the volume of water actually used. But these methods have proved cumbersome and unpopular. Water rates, therefore, on the whole follow the principle of 'No Crops, no Charge'. The cultivator naturally dislikes to be liable for water rates which have no connection with the area under cultivation or the quality of the crop raised.

The rates, it may be added, vary from State to State. Even in the same State they vary according to the nature of the crops, e.g., for sugarcane it varies from Rs. 7-8 to 12 in Madras, from Rs. 9 to 11 in East Punjab and from Rs. 5 to 12 in U. P. Similarly for wheat it varies from Rs. 4/4/- to 4/4/7 in East Punjab to 33 in Hyderabad Rs. 4/4/7 in Madras and Rs. 3 to 5 in U. P. for land under rice from Rs. 4 to 18 and that under cotton from Rs. 3/8 in the Punjab to Rs. 10 in Madras. This shows that the rates are higher for cash crops than for food crops.

If extra crops are grown and additional water is needed an extra charge is made for the same. If the crop fails to mature, or if the yield is less than normal, either the whole or part of the irrigation assessment is remitted. In contrast with this practice, in West Bengal and Madhya Pradesh, there is a system of long-term fixed charge whereby the cultivator pays a small rate for a term of years, whether or not he takes the water. This practice is suitable for these States as the normal rainfall there is generally high and may be depended upon for the required water supply. Artificial irrigation is thus a kind of luxury for which the cultivator

would not pay a high rate, as he would not ordinarily need extra water costing excessively in his judgment.

Irrigation works have nevertheless been constructed to guard against possible failure of rains; and so the most acceptable method of charging seems to be to make an initially lower charge, which makes water available to the cultivator when he wants it during the terms of years for which the charge is fixed. From the view-point of the cultivator this is also economical as he need not wait till the last moment for the water he may need. And from the point of view of the Government also, it is fair as a certain minimum charge is assured to ease the burden of interest and maintenance charges.

Government Classification of Canals

Canals are classified by the Government in a different way. Before 1921, they were classified as (i) productive, (ii) protective and (iii) minor.

(i) *Productive Works*. Were those which were expected to yield a net revenue sufficient to cover the interest charges on the capital invested within ten years of their completion. Such works were financed from the general revenue or more often from funds raised on the Government security. Most of the largest irrigation works in India belong to this class.

(ii) *Protective or Unproductive Works*. Were not expected to yield a direct return but were a mere measure against famines. They were financed from the current revenues, generally from annual grants for famine relief and insurance.

(iii) *Minor Works*. Were small works for which detailed capital or revenue accounts were not maintained. Such works may be productive or unproductive.

Since 1921, this classification has been abolished. Now loans can be taken for any work of public utility. Now all irrigation works for which capital and revenue accounts are kept are classified under two main heads: (i) productive and (ii) unproductive. A third category is that of which capital accounts are not kept.

During the first four years of the First Plan Period, the Central Government, sanctioned about Rs. 60 crores for minor irrigation schemes such as construction and repair of wells and tanks, the installation of pumps and the construction and repair of dams and channels. A result of the schemes executed during the First Plan, about 1 crore acres have been brought under irrigation against the five year target of 1.12 crore acres. The target for 1955-56 had been fixed at 29 lakh acres. Details of benefits

accruing from the various minor schemes during the first four years of the Plan are shown in the following table :—

Schemes	(In lakhs of acres)	
	Target for years	Achieve- ment (1951—55)
Construction and repair of wells	... 16.5	10.7
Tube-wells	... 6.6	6.5
Pumping and Installations	... 7.0	7.3
Dams, Channels, etc.	... 52.2	33.7
Additional Minor Irrigation Programmes ...	30.2	20.8
Total	112.3	79.0

The following table gives the main canals, the area irrigated and the total capital outlay on them.

Name of States	Name of work	Year of completion	Total capital outlay (Rs. in lakhs)	Area irrigated (thousand acres)	Percentage return on capital outlay
Bihar	Son canals	1875	268	655	7.3
	Tribeni canal extension	1957	113	62	3.1
Bombay	Nira left-bank canal	1906	148	90	4.7
	Godavari canals	1916	107	63	4.2
	Pravara canals	1926	151	90	...
	Gangapur reservoir	1937	334	45	...
	Nira right-bank canals	1938	412	89	1.8
	Chatrabha left-bank canal	1957	545	138	...
Madhya Pradesh	Kakrapara canals	1957	1101	562	...
	Tandula canals	1925	120	158	...
Madras & Andhra	Mahanadi canals	1927	159	199	...
	Gauvery delta system	1889	87	1070	13.9
	Godavari delta system	1890	210	1229	12.1
	Kurnool Cuddapah canal	...	234	88	0.8
	Pennar river canals	1894	71	178	6.5
	Periyar system	1897	108	202	5.6
	Krishna delta system	1898	227	1002	15.7
	Lower Coleroon anicut	1903	30	123	10.1
	Krishna east-bank canal extensions	1913	59	100	7.8
	Cauvery-Mettur Project	1934	646	232	1.7
	Lower Bhawani	1955	961	207	...
	Tungbhadra	1956	2544	167	...
	Rallapad	1956	90	8	...
Orissa	Orissa canals	1895	380	40	...

Punjab (I)	Western Jamuna Canal	1820	204	1018	8.1
	Upper Bari Doab Canal	1879	...	783	20.9
	Sirhind Canal	1884	267	2312	14.6
	Eastern Canal	1928	114	190	...
	Nangal Barrage	1954	406	...	...
Uttar Pradesh	Eastern Jamuna Canal	1831	66	446	63.2
	Ganga canal	1856	466	1620	25.2
	Agra canal	1875	129	343	4.6
	Lower Ganga Canal	1880	467	1251	8.6
	Betwa Canal	1893	124	221	1.0
	Ken Canal	1909	67	140	5.4
	Sarda Canal	1930	1157	1297	2.9
	Extension of Sarda Canal	1955	110	176	...
	Sarda canal reservoir (Stage I)	1957	480	172	...
West Bengal	{ Matatila (Stage I)	1956	488	265	...
	{ Damodar Canals	...	128	184	...
	{ Midnapore Canals	...	85	74	...
	{ Mayurakshi	1958	1611	600	...
Hyderabad	{ Nizamsagar Canal	1940	472	275	...
	{ Godawari (Stage I)	1957	441	67	...
Mysore	{ Krishnarajasagar Canals	1932	260	92	...
	{ Tungbhadra	1956	1022	93	...
	{ Tunga Anicut	1957	231	22	...
	{ Nugu	1957	244	20	...
Rajasthan	{ Jawai Project	1956	300	45	...
	{ Parbati Project	1956	80	15	...
	{ Meja Project	1956	59	43	...
Travancore- Cochin	{ Kuttanad	1956	101	21	...
	{ Peechi	1956	205	46	...

Economic Effects of Irrigation

(i) *They have banished famines.* The economic effects of the development of irrigation on agriculture, population, trade and industry are tremendous in places of habitually deficient rainfall like Rajasthan and the areas that lie in the famine zone like U. P., M. P. and Deccan plateau. The irrigation facilities in these States have averted the great disaster that might be brought about by the chronic droughts and save millions of people from death. It is said and not without any foundation that India adds every year an Egypt to its lands. They have banished the grim spectre of famine and brought peace, prosperity and a higher standard of living to the whole country.¹ Various parts of India which were once a treeless, waterless and sun-burnt wasteland have now been converted by the beneficent hand of men into the flourishing lands. As Mr. Darling puts it, "The colonies have in fact, opened (for the Punjab) an era of prosperity undreamed of in the past."²

(ii) *They have increased agricultural production.* Increase in irrigated land has been a boon to the cultivators for not only is the output of their fields ensured in ordinary years of drought but also the amount of produce is very largely increased in ordinary years at comparatively low cost. Mr. Mukhtar Singh was of the opinion that artificial irrigation can step up production by 26%. Dr. Sudhir Sen asserts that increase in yields due to irrigation is considerable, in case of rice the increase is 50% and that for wheat 66%. The experiments conducted on paddy and wheat under irrigated and non-irrigated conditions in Madras, Madhya Pradesh and Uttar Pradesh confirm that irrigated crops, if well managed, yield twice or three times in comparison to rain-fed crops. The Advisory Board of I. C. A. R. holds that the production of irrigated crops per acre is on an average 50 or 100% higher than that of the unirrigated crops in the same locality.

In almost all parts of the country commercial crops always monopolized irrigated zones. Thus jute is confined to the fertile Ganges-Brahmaputra delta and we are told that river inundation bringing down rich alluvial deposits enables the cultivator to plant this exhausting crop year after year without expenditure on manure.³ Of sugarcane we learn, in Uttar Pradesh and Bihar the crop is entirely irrigated, elsewhere it depends for the most part upon the sufficiency and the timeliness of the monsoon rainfall.⁴ It is but natural that where irrigation is available commercial crops enjoy precedence at the cost of food-crops.

¹ Bernard Darlev, *Op. Cit.* p. 167.

² Darling, *Punjab Peasantry in Prosperity and Debt*, p. 119.

³ Cotton, *Handbook of Commercial Information*, 141.

⁴ *Ibid.*, p. 156.

(iii) *They provide means of transport.* Besides making the land productive, canals afford a good means of transport and communication. No doubt railways can afford transport and communication but canals can do something more than this. They can ensure and enhance the productivity of soil by providing water supply which railways cannot do.

(iv) *They provide revenue to the Government.* Financially considered, irrigation works are a great source of revenue to the Government of India. When the cultivable tracts of land are brought under plough the Government charges water rates, land revenue and other taxes on the commercial and industrial activities connected with them. Thus as Dr. Knowles writes, "The irrigation works have made security of life, they have increased the yields and the value of the land and the revenue derived from it. They lessened the cost of famine relief and have helped to civilize whole region. *In addition they yield a handsome profit to the Government of 7 to 8%.*¹ "But the benefits of irrigation," in the words of Sir Bernard Darley, "cannot be measured only by Government receipts nor indeed by the area irrigated. India has an ever-growing population which must be fed; the time is not far off when every available acre will be cultivated and still more land will be required to raise food for the multitude. The only remedy for this desperate situation will be to increase the yield from the land already under cultivation."

Defects of the Canal Irrigation

Irrigation water when misused spoils the soil beyond repairs. Mr. Pugh traces back the history and remarks that soil civilization in the Middle East disappeared because of misuse of irrigation water. The Agricultural Reorganisation Committee of U. P. (1948) points out that at some places yield of crop decreased due to irrigation water. This is due to (a) greater demand on soil nutrients to produce higher yields, (b) the leaching effects of irrigation, and (c) connection of injurious salts in the upper layers of the soil.

It causes water-logging, etc. Canal irrigation, however, suffers from a very serious defect against which it is very necessary to guard effectively. An abundant supply of water from the canals for irrigation does not only lead to a great waste of water but also what is more serious is that it causes waterlogging and salt effervescence. "Waterlogging may be defined," says Professor Brij Narain, "as the rise in the level of the subsoil water which renders land unfit for cultivation." The approach of the danger is

¹ Dr. Knowles, *Economic Development of British Empire Overseas*, Vol. I, pp. 367-68.

marked by certain well-known stages which has been very lucidly described by him thus :—

(i) For one or two years *barani* crops are unusually successful, and there is a spontaneous growth of the rich crop *Maina*. (ii) In the third year patches of Kallar begin to appear on the affected soils and the seed does not germinate on these patches. (iii) The yield begins to diminish and the patches extend till they cover the whole field. (iv) Depressions in close proximity to the canal remain permanently damp and have water of a rusty colour. (v) An obnoxious odour is emitted by the *abadis* and the drinking water tastes raw. (vi) The spring level rises and comes closer up to the surface of land.¹

What happens actually is that the salts of the soil come up to the surface with the rise of the subsoil water level. The canals act in two ways in ensuring this phenomena. *Firstly*, they intersect drainage lines and cause rain or flood water to be held up. *Secondly*, they cause their own water fall vertically until it reaches the spring level. "If the subsoil outflow is not enough to balance the inflow, the spring level rises being drawn up by capillary attraction and all the salts of the earth come to surface and make the land unfit for crops."² This causes the soil to deteriorate by bringing out *alkali* or *reh* to the surface of the soil. In West Punjab it is reported that some 125,000 acres were thrown out of cultivation by the rise of subsoil water and a still larger area was rendered unsuitable for growing of crops by the appearance of salt-kallar. Similarly in the Nira valley of Bombay alkali lands have arisen from canal irrigation. It has been reported that 51,000 acres have been damaged in this way. The damage is enormous, the area representing more than 25% of the actual area of irrigation.³

The remedies usually suggested for this phenomenon are : (a) Pumping out of water by tube-wells and other methods of drainage, (b) Proofing of canal beds by concrete, (c) Opening out of closed and obstructed drainage, (d) Replacing canal irrigation by well irrigation, (e) Prevention of over-irrigation, to force the cultivator to economise water. (f) Attempts should be made to change the time of supplying canal water and that the beds and sides of canals should be rendered impervious *inter alia* treating them with sodium carbonate.⁴

(ii) *They have created unhealthy conditions.* Moreover, canal-irrigated areas have shown susceptibilities to encourage malaria

1 Brij Narain, *Indian Economic Life*, p. 383.

2 Brij Narain, *Ibid.*, p. 383.

3 N. P. C's Report on River Training and Irrigation, p. 51.

4 John Russel, Report on the Working of the Imperial Council of Agricultural Research.

with its very harmful and pernicious effect on the health of the peasants and the village-folk. In order to safeguard against this danger the Royal Commission recommended that careful drainage surveys should be made in future in all irrigation projects and drainage maps should be prepared. Sir John Russel also emphasized the urgent need for proper soil surveys and agricultural analysis. "It may be laid down as an absolute rule that no irrigation scheme should ever be carried out until a proper soil survey of the region has been made. Barely one-half of the water delivered at the head of the canal reaches the field."

Problem of Transmission of Water. The problem of transmission of water also deserves consideration. The site favourable for a reservoir of water may not suit as off-take for the alignment of a canal, the area under a canal may be such that a plentiful application of water may do it harm; or it may be that the conditions of soil or climate will give a greater value to water in irrigation lower down the valley. In the central tableland, however, there is usually no difficulty in utilizing river-beds as a means of conveying water. Here rivers flow in the lowest parts of the valleys, and generally the beds are rocky without any subterranean passages through which water can be lost underground. We are, therefore, favourably placed in this matter of transmission, which has a very important bearing in the extensive use of water, the only loss may be said to be that of evaporation.

As a corollary to this, tracts should be commanded by means of canals not too long. Considerable lengths of canals mean loss of water and great increase in cost of delivery. Even in Northern India where there is the advantage of water being cheaply obtained, transmission of water is the question of selection of lands that are worth irrigating. At present the revenue survey records class as cultivable a large area of land which is so poor indeed that it cannot be irrigated with advantage; also there may be tracts of undulating lands where the slopes are stony and have but little soil on them. It is essential that the soil should be of a good order of fertility and we must have a detailed land classification to determine whether the land is worth the water to be applied to it. The water resources will ultimately limit the productive capacity and should not be used as to be out of balance with the lands proposed to be irrigated.

Besides these, it is also necessary to disseminate more knowledge on irrigational practices through demonstration and propaganda on subjects like (i) water requirements of different crops, (ii) proper time and frequency of water application, (iii) fertilizer application in conjunction with irrigation water, (iv) economic use of irrigation water and (v) post-irrigation operation and moisture conservation practices.

Irrigation Policy of the Government

Irrigation in India has been practised from very early times. This fact is proved by the existence of old wells and tanks in the various parts of the country, *e.g.*, in the Chingleput district of Madras, two tanks which still irrigate a fairly large area, as referred to in description of the eighth and ninth centuries.¹ Whatever irrigation works were there were generally constructed on a small scale which linked the economic structure of the society; and as such larger works were unknown. Even canals were constructed by the past rulers, *e.g.*, the Western Jamuna canal dated from the 14th century and the Eastern Jamuna Canal was constructed by the Mughals. The Cauvery Delta system in Madras dated from the second century A. D. All these were inundation canals, which were constructed by forced labour of the coolies and which were fed by the rainfall. But the fall of the Mughal Empire in the 18th century prevented the maintenance and repair of canals by forced labour. According to Dr. Anstey, "The lack of capital and the engineering skill, insecurity of tenure and the consequent unwillingness to sink capital in fixed improvements and ever-recurring invasions and internal political dissensions, seriously checked the extension of irrigation".² During the 18th century, therefore, the Jamuna canal fell into decay. These were destroyed and in many places covered with jungle.

The Water Potential

The mean annual rainfall amounts to 2750 million acre ft. Of this 51% or about 1400 million acre ft. is lost through evaporation and transpiration, and is absorbed by the soil, and about 1½% to 2% is drawn by wells for irrigation. The remaining 49% or about 1350 million acre ft. forms the annual surface run-off drained by our mighty rivers, the peak discharge in the lower reaches of a number of which exceeds two million cusecs. Converted into a regulated discharge, the rivers carry 1·87 million cusecs all the year round, and this water spread over the culturable area will cover it to a depth of about 3½ feet. The idea of the magnitude of our water potential can be formed in another way also. Though the exact proportion of water which seeps into the ground to form the underground reservoir has not been assessed, it is a huge quantity, and roughly speaking not less than 30·35% of the annual rainfall. Regarding the surplus flow it is said that in approximately the time taken by a man to shut his eyes and open them again rivers discharge 1·87 million cubic ft. of water into sea. The quantity is enough to fill a circular tank of 40 ft. diameter to a height of about 1400 ft. 6 times the height of the Qutub Minar. Considered as a whole the water potential is an enormous volume, and the CWING rightly believe that 'India

¹ D. G. Harris, *Irrigation in India*, p. 14.

² V. Anstey, *Economic Development of India*.

is fortunate in possessing these resources in abundance and having them strategically distributed."

Possibilities of Extension

At present roughly speaking 76 million acre ft. (5.6%) of water is being used in irrigation and this is hardly 3% of the total potential and 5.6% of the total surface-run-off and the remaining 94.4% runs to waste. The area irrigated and the quantity of water used are comparatively very small, and in view of the potential quantum there seem to be vast possibilities of the extension of irrigation.

In respect of the surface flow, a large part of it cannot be made available for utilization in certain tracts. The utilizable quantity is probably about 15 (with a maximum of 17) billion cubic feet, and of this, it was estimated that 6.75 billion cubic feet or 45% were being utilized. In respect of the quantity percolating into the ground it is said that not even 2% of it is drawn by wells for irrigation.

Talking in terms of the acreage which can be irrigated, it is impossible to forecast with any degree of reliability the ultimate limit, because it will depend upon the technological developments and the other socio-economic factors which cannot be predicted over a distant future. The NPC have, however, hazarded a guess regarding the possibilities of irrigating an area of 116 million acres : 50 from government canals and reservoirs, 60 from other sources utilizing surface flow and 6 from wells drawing the underground supply. Such a forecast can be treated hardly anything more than a vague hope. A better course, however, is to assume a limited period. The Irrigation Commission, 1901, outlined a constructive programme for the then Br. India for the extension of about 6 million acres in 20 years under government canals and reservoirs, and further suggested an increase of 16 million acres under wells. The Advisory Planning Board, 1947, mentioned that the irrigation projects already under construction or in contemplation are expected to bring 20 million acres under irrigation in 10-12 years. A more accurate and reliable data has been furnished recently.

Under First and Second Five Year Plans

The area irrigated in 1951 was 51.5 million acres or 17.5% of the total cultivated area of the country. This percentage was to increase to 20% at the end of the first plan. The plan provided for 7 irrigation projects costing more than Rs. 30 crores, 6 irrigation projects costing between Rs. 10 crores and 30 crores, 4 costing between Rs. 5 and 10 crores, 50 costing between Re. 1 crore,

and Rs. 5 crores each and about 200 costing less than Rs. 1 crores. Although as such Rs. 340 crores will have been spent during the first plan, by 1956 the additional irrigation will amount to about 6.3 million acres, compared to a potential of about 22 million acres. During the first plan, additional irrigation of 16.3 million acres would have been achieved : 6.3 million acres from large and medium projects and 10 million acres from minor irrigation works.

During the Second plan, it is proposed to bring under irrigation an additional area of 21 million acres, 12 million acres from large and medium projects and 9 million acres from minor irrigation projects. Out of the 12 million acres, 9 million acres will be irrigated by projects which are at present under execution and 3 million acres from new projects to be taken up during the Second plan. The latter have an ultimate potential in irrigation benefits of about 15 million acres, so that by 1961, the total irrigated area in the country would be 88.8 million acres.

Out of 195 new irrigation projects, ten of these would cost between Rs. 10 and 30 crores, seven between Rs. 5 and 10 crores and the rest less than Rs. 5 crores. The total number, costs and benefits of the different sizes of new projects included in the plan are set out below :—

Estimated cost	No. of projects	Total estimated cost	Approximate irrigation benefits on completion (million acres)
Between Rs. 10 and Rs. 30 crores	10	191	8.4
Between Rs. 5 and Rs. 10 crores	7	54	1.5
Between Rs. 1 and Rs. 5 crores	35	85	3.4
Less than Rs. 1 crore	143	46	1.5
	195	376	14.8

The total cost of new irrigation projects included in the Second plan is about Rs. 380 crores of which about 172 crores will be spent during the Second plan, the balance being required in the third and subsequent plans.

Irrigation Research in India

Great strides in irrigation (including hydraulic) research have been made in India within the last 40 years. Some of this has been *ad hoc* and inspired by the personal interest and scientific ambitions of individual engineers ; but substantial advance has been made through organised research.

The first in the field was Bombay where special Research Division was created in 1916 to investigate local problems on land drainage and reclamation. In 1920 a hydro-dynamic research

station was opened on a small distributory near Poona. By 1925 the activities of the Research Station had developed beyond belief and the water supply available for model work was found to be inadequate. The station was consequently moved to Khadakvasla in 1934 below the Khadakvasla Dam where conditions for research were excellent. After 1945 the activities of the Central Research Station at Khadakvasla multiplied and problems were referred to it from all parts of the country. In the 33 years of its existence over 1,500 experiments have been carried out that relate to river training, the design of channels and hydraulic works, navigation, soil and agricultural problems.

The Hydro-dynamics Research Station of Khadakvasla was taken over by the Government of India in 1937, to assist river training, research problems and irrigation and was renamed as the, 'Central Water Power Irrigation and Navigation Research Station' early in 1948. In order to meet the increased demand for research facilities from the Central, Provincial and State Governments, the station is now under expansion. The Station now consists of eight Sections. (i) Canal Hydraulics, (ii) Navigation, (iii) Concrete and Materials of Construction, (iv) Soil and Soil Mechanics, (v) Mathematics (vi) Statistics, (vii) Physics, and (viii) Hydraulic Machinery.

After Bombay came Punjab, where the danger of water-logging and deterioration of land by salts became alarming. Investigations were started in 1923 and gradually a hydraulic laboratory came into being at Lahore. This had since developed into one of the finest research institutions in the world but was lost to India by partition in 1947. A new Research Institute was set up with headquarters at Amritsar.

The Irrigation Research Station in U. P. was established in 1930 at Lucknow but has since moved to Roorkee. Investigations have been carried out on calibration of flumes and falls, the study of non-silting distributory heads, fluming of structures, water requirements of crops, earth dam construction, river-training and sub-soil supplies available in different doabs in the western districts of U. P.

The River Research Institute of West Bengal was set up in 1943 and comprises the River Model Station and Galsi, Tidal Model Station at Belgharia, the Soil Mechanics Laboratory at Russa and the Statistical Laboratory at Anderson House, Alipore (Calcutta).

The Krishnarajasagar Research Station at Mysore was established in 1945 immediately below the Krishnarajasagar Dam on the river Cauvery. The Hyderabad Engineering Research Departments, the Irrigation Research Station, Poondi, Madras State, the Soil Engineering Research Station, Chepauk (Madras) the

Concrete Laboratory Chhapauk, and the Hirakud Research Station (Orissa) have all been established in the course of the last decade.

Irrigation Organisations

Besides the Irrigation Departments of various States, there are three central bodies dealing with irrigation matters, *viz.*, the Central Waterpower, Irrigation and Navigation Commission, the Central Board of Irrigation and the Central Groundwater Organisation.

(i) The Central Waterpower, Irrigation and Navigation Commission (CWINC) was set up by the Government of India in 1945 with the object of initiating, co-ordinating, and furthering the schemes for the control, conservation and utilisation of water resources throughout the country, for purpose of irrigation, water-power generation, navigation and flood control, and if so required, the construction of new schemes. The Commission consists of a chairman, two full-time members, and technical administrative staff to perform these functions. It has published a number of papers. In 1951-52 it was amalgamated with the Central Electricity Commission and the Central Technical Board to form a new organisation known as Central Water and Power Commission.

(ii) The Central Board of Irrigation (CBI) was set up in 1931 to co-ordinate research on irrigation and allied subjects conducted at all research irrigation stations in India. The Board maintains one of the finest libraries on irrigation, hydro-electric and other subjects where enquiries from engineers in India and abroad are dealt with.

(iii) The Central Groundwater Organisation (CGO) was established in 1946 in conjunction with the drive for "Grow More Food Campaign" and its objectives include (a) assisting provinces and states in securing materials for execution of tube-well projects and training their personnel in the use of equipment, (b) assisting in the construction of tube-wells and (c) collecting and co-ordinating information available about sub-soil supplies and carrying out research in developing improved methods of exploiting ground water supplies.

CHAPTER 9

WATER POWER RESOURCES

It is interesting to note that four-fifths of India's water resources come from the systems flowing into the Bay of Bengal, while the waterless regions of Rajasthan provide us with nothing at all. The following table gives the distribution of India's water resources¹:—

Regions	Catchment area in Sq. miles	Normal Annual Rains (inches)	Mean Temp. in Degree (Fahren)	Annual Loss (inches)	Annual Runoff	Annual Run-off (million acre. ft)
1. Catchment Area of all rivers flowing in Arabian Sea	189,790	47.95	77.9	23.11	24.84	251.46
2. Catchment Area of Indus Basin in India	136,673	21.96	54.7	13.02	8.84	64.43
3. Catchment Area of Rivers falling into Bay of Bengal (excluding Ganga & Brahmaputra systems)	467,309	42.77	79.0	29.37	13.40	334.03
4. Catchment Area of Ganga river system	376,818	43.76	62.2	24.00	19.76	397.09
5. Catchment Area of Brahmaputra River System	195,460	48.11	46.8	18.47	29.64	308.95
6. Area of waterless Rajasthan	64,887	11.48	79.1	11.48	...	...
Total	1,430,937	41.48		23.26	17.77	1,355.96

Only about 76 million acre feet had been utilised up to 1951, i.e., only 5.6 % of the river flow. The position in regard to utilisation of water resources in the important river basins will approximately be as set out below²:—

¹ Khosala, *Appraisal of India's Water Resources*.

² *Second Five Year Plan*, p. 321.

River systems	Estimated average flow	Utiliza- tion upto 1951	Additional utilization by projects entered into I plan (on full develop- ment)	Additional utilization by projects entered in the II plan (on full develop- ment)
			(Figures in million acres)	
1. Indus	168	8.0	11.00	1.2
2. Ganga	400	20.0	21.5	14.5
3. Brahmaputra	300	nil	nil	nil
4. Godavari	84	12.0	1.0	1.5
5. Mahanadi	84	0.6	10.5	0.2
6. Kistna	50	9.0	15.6	2.6
7. Narmada	32	0.2	nil	10.1
8. Tapi	17	0.2	0.7	3.5
9. Cauvery	12	8.0	1.3	0.6

The first hydro-electric plant in India was installed at Darjeeling in 1897-98. Soon after, in 1899, the first 1,000 kw. steam-driven power was installed at Calcutta. This was followed by a hydro-electric station on the river Cauvery, at Sivasundram in 1903. Power was carried out 92 miles of transmission lines to Kolar gold fields. The First War gave a tremendous impetus to the use of electricity. The Industrial Commission of 1916-18, emphasized the necessity for a hydro-electric Survey of India. Accordingly Electrical Adviser to the Govt., was appointed. Mr Mears' report indicated a minimum continuous flow of water power of 3.5 million kilowatts with a maximum of 8 million kws. as power potential of the country. But the Govt., took very little interest in the power development in the country. It was the enterprising spirit of the Tatas that the biggest hydro-electric power group came into being near Bombay. Soon after this the State Governments of Madras, Punjab, Travancore and U. P. started their own hydro-electric installations.

The Second War brought about the setting up of the office of the Electrical Commissioner with the Govt., of India in 1941 to regulate, assist and control the electric power supply. In 1945, the Central Technical Power Board was set up, and in 1948 it was merged with the office of the Electricity Commissioner to form the Central Electricity Commission. To ensure efficiency and economy in the administration, the Central Electrical Commission and the Central Water Power, Irrigation and Navigation Commission were recently amalgamated to form the Central Water and Power Commission. This commission has taken in hand a detailed study for the assessment of water power potential of the country.

The results of the studies on the west-flowing rivers of the Western Ghats indicate the power potential of about 4 million kw; and about 7 million kw. from the east-flowing rivers of South India; about 4 million kw. from the Narmada, Tapi, Mahanadi, Brahmani and Baitarni basins in the central region and about 20 million kw. from the Ganga, Brahmaputra, Indus and other Himalayan rivers in the northern and north-eastern regions. At present it is estimated that the total potential of the country may be over 35 million kw.¹

The progress of power production was very slow till the mid-twenties, the aggregate installed capacity in 1925 amounting to 1,62,341 kw. By 1935, the installed capacity had increased more than five-fold, *i.e.* to 900,402 kw. and by 1954, this increased to 2,493,996 kw. The following table gives the progress of electric power in India from 1900 :—

Aggregate Installed Generating Capacity in Kws.

Year	Steam-plant	Oil Gas Plant	Hydro	Total
1900	1,000		130	1,130
1910	14,925	955	15,467	31,347
1920	49,245	6,323	74,441	130,009
1930	266,660	44,889	286,591	598,140
1940	624,162	115,291	468,969	1,208,422
1948	788,393	106,869	504,154	1,399,410
1951	1,097,000	163,000	575,000	1,835,000
1952	1,176,000	170,000	715,000	2,061,000
1953	1,394,000	180,000	731,000	2,305,000
1954	1,491,000	210,000	793,000	2,494,000
1960-61	3,480,000	360,000	160,000	6,000,000

In 1954, of 2494 m. kw., 10,27,536 kw. or 42% belonged to 203 Government-owned power stations; 27,956 kw. or 1.1% to 16 municipalities and 154,000 or 52% to 214 power stations owned by private companies. By far the major part of the development of the public utility electric supply has been made by the private companies. Besides public utility power stations, some individual industries and the railways operate their own plants.

Bombay has the highest installed capacity (600,387 kw.) followed by West Bengal (547,512 kw.) and U. P. (246,591 kw.). The installed capacity in Assam and Pepsu is only 4,482 kw. and 6,825 kw. respectively.

The development of electric power is not uniform throughout the country, but is concentrated in a few regions. Again, amongst these regions also, there are considerable differences so far as the

¹ India, 1956, p. 193, and *Second Five Year Plan*, p. 331.

nature and extent of the power development, the ownership of schemes, and nature of loads, etc., are concerned. There seem to be 5 such zones, and a brief discussion of each may be as follows :—

1. *South India* (comprising of Mysore, Madras and Travancore and Cochin States). Due to long distance from collieries the use of coal for generating power is very costly, and, therefore, greater development of power is from water. The total installed capacity is 4.9 lakh kw. and the energy generated is 1809.2 m. kw. of which 80% is hydel and only 20% thermal. In Mysore the hydro-electric stations are at Sivasamudram, Shimsha and Jog. These three are interconnected, and supply power to Mysore State. Their installed capacity amounts to 178,283 kw. One of the important loads supplied by this system is in the Kolar gold fields. In Madras there are 3 hydro-electric stations at Pykara, Mettur and Papnasam. These three are interconnected and serve mostly South Madras. There is a big thermal station in Madras city which is connected with Mettur station. The capacity of the interconnected system of these stations is augmented by a steam power station at Madhurai. Besides, there are two more thermal stations at Vijaiwada and Vishakhapatam. The installed capacity of Madras is 241,570 kw. of power. In Travancore and Cochin there is a hydro-electric station at Pallivasal, which is said to be mostly responsible for the development of the aluminium, fertilizer and chemical industries in the State. The installed capacity is 77,623 kw. The two distinct features of the electric development in this zone are that these schemes, specially the generating stations and main transmission lines, are State-owned, and though the aggregate capacity is not very large, they are extending power supplies to rural areas for agricultural and other purposes.

2. *Bombay Area*. The total installed capacity is 60 mill. kw. of which 60% is hydel and 40% thermal. The major public utility stations are the three hydro-electric stations at Khopoli, Bhivpuri and Bhira on the slopes of the Western Ghats between Poona and Bombay, belonging to the Tata Electric Agencies, and the thermal power station at Ahmedabad, belonging to Ahmedabad Electricity Co. The Tata Electric system is interconnected with the steam power station of Central Railway at Kalyan and serves the industrial installations in Bombay, specially the textile industry. The thermal plant at Ahmedabad supplies power to the textile mills there. Outside the industrial areas of Bombay and Ahmedabad there are two thermal stations at Surat and Sholapur, sustained mostly by industrial load. The distinct features in this region are that outside the industrial centres of Bombay and Ahmedabad there is very little electric development, and the

electric supply industry is almost exclusively in the hands of the private enterprise (only exception being the station at Bhatagar).

3. *Bihar-Bengal Area.* The aggregate installed capacity including both the public utility and the privately owned power stations is 64 mill. kw. Ample supply of coal being available in Bihar and Bengal collieries electric development in this areas is based almost exclusively on steam power plants. Again the development is exclusively due to private enterprise. The largest of the power stations at present are the four steam power stations at Cossipura, New Cossipura, Southern and Mulajore, belonging to the Calcutta Electric Supply Corporation, and supply power to Calcutta industrial and residential areas. Other major public utility stations are at Gouripore, Seebpore and Dishergarh in Bengal and Sijua, Jheria and Patna in Bihar. Besides, there are a good number of privately owned plants belonging to Railways, collieries and other industries, the biggest of which are belonging to the Tata Iron and Steel Co. at Jamshedpur, the Indian Iron and Steel Company at Kulti and Hirapur, the Rohtas Industries Ltd., Dalmianagar, and the Aluminium Corporation of India near Asansol. Except in the city of Calcutta and a few large towns where domestic and other general demands come up to about 20% the remaining power development is due to industrial demand. Outside the industrial areas of Bihar and Bengal there is very little electric development.

4. *Uttar Pradesh and Punjab Area.* The aggregate installed capacity is 24 mill. kw. The power is partly thermal but mainly hydel. The Uttar Pradesh Government has taken a lead in promoting electric development. There are 8 hydro-electric stations on the Upper Ganges canals at Bhola, Palra, Sumera, Salwan, Nirgajni and Bahadurabad, etc. They are inter-connected with one another, and also with two steam stations at Chandausi and Hardua-ganj. A special feature of the Ganga Canal Grid scheme is the predominance of the agriculture and irrigation loads. In fact tube-well irrigation in areas not directly commanded by canals was the main objective with which this scheme was initiated. The U. P. Government has also installed a steam station at Sohawal, and has purchased one at Kanpur belonging to Messrs. Martin Burn, Ltd. Besides, in several big towns of U. P. like Agra, Allahabad, Banaras, Lucknow and Bareilly power is supplied from steam stations belonging to Martin Burn, Ltd. Supply in Delhi, is obtained from the Central Generating Station, Delhi, and in Punjab there is a big hydro-electric station at Jogindernagar, which serves several important centres such as Amritsar, Jalandhar, Ludhiana and Ferozepur, and also continues to serve considerable areas in West Punjab (Pakistan).

5. *Central Region.* (comprising of Hyderabad, Madhya Pradesh and Orissa). The total installed capacity is 5 mill. kw. and the power is almost exclusively thermal. The important public utility installations are at Nagpur, Cuttack, Khaperkheda and Hyderabad. Besides, there are several power plants belonging to private industrial concerns such as collieries, cement factories, textiles, chemicals, paper mills and ordnance factories, etc. The major part of the power generated in this region is by these plants, and, therefore, through private enterprise. This region has good potentiality of industrial development since it possesses rich mineral resources such as manganese, coal, bauxite, iron ore and limestone, which have not been systematically developed so far.

It will be interesting to note that the total installed capacity of all these regions comes to about 24 million kw., *i.e.*, 88% of the total. The remaining power is scattered over the rest of the country.

Though India's potential resources are vast, the actual generation of electrical energy per capita does not compare well with other countries, as will be clear from the following figures :—

Countries	Per Capita Electricity production	Countries	Per Capita Electricity production
India	19 kw.	U. S. A.	2,771
Norway	5,698	U. K.	1,288
Canada	4,431	Japan	642
Sweden	3,119	Mexico	204

Future Development

For the purpose of planned development India has been divided into 11 power zones as below :—

(1) The river basin of the Punjab ; (2) The Central Ganga Basin between its sources and eastern borders of U. P. ; (3) The Eastern Ganges Basin drained mostly by its northern tributaries ; (4) The Brahmaputra of N. Assam ; (5) The Hooghly basin which comprises parts of Eastern Bihar and almost whole of the Western Bengal ; (6) The Orissa river system bounded on the north by the watershed of Subranrekha and on the south by Mahanadi ; (7) Godawari system with its tributaries draining into the Bay of Bengal ; (8) The Kistna system which covers some of the dry districts of the central and eastern Madras ; (9) The Cauvery system ; (10) The Central India river system of the Tapti and Narbada ; and (11) The Malwa river system skirting the eastern borders of Rajasthan and centring round the Chambal which drains the

Jamuna. The present capacity and the anticipated capacity of these power plants is as follows :—

Zone No.	Particulars of the area covered	Present installed	Anticipated Capacity in Kilowatts	
			in 1954	in 1959
1	Jammu and Kashmir	6,000	6,000	12,000
2	Punjab Delhi and part of Rajasthan	127,004	269,000	533,000
3	Parts of M. P. and Rajasthan	108,000	211,000	293,000
4	Bombay and small part of Hyderabad	447,000	565,000	730,000
5	S. India excluding Andhra Coastal Districts	270,000	587,000	692,000
6	Andhra Coastal Districts of Madras, parts of Madras M. P., Orissa and Hyderabad	61,000	194,000	245,000
7	Area under Mahanadi	32,000	72,000	195,000
8	Mid—U. P.	119,000	154,000	382,000
9	West Dists. of U.P.	81,000	138,000	215,000
10	Calcutta and Damodar Valley	749,000	1,246,000	1,538 000
11	Assam	4,000	9,000	12,000

At the beginning of the first plan, the total installed capacity of power-generating plants amounted only to 2·3 million kw. In the first plan, the installed capacity has increased by 1·1 million kw. to 3·4 m. kw. In this share of the public sector has grown from 0·6 to 1·4 million kw, and the per capita consumption of electricity has risen from 14 to 25 units. As against 3,687 towns and villages electrified early in 1951, the number at the end of the plan period was 6500.

It has been estimated that over the next 10 years, installed capacity will need to be expanded by 20% annually. This means that for 1960 the target should be 15 million kw. Accordingly a programme to raise the installed capacity from 3·4 million kw. in March 1956 to 6·9 million kw. in March 1961 has been included in the Second Plan. Of the increase of 3·4 million kw. between 1955-56 and 1960-61, 2·9 million kw. will be from the public sector (2·1 million kw. of hydro-electric plant and 800,000 kw. of thermal plant), 200,000 kw. from electricity supply companies and 300,000 kw. from industrial establishments. In the public sector hydel power will account for the addition of 2·1 million kw. and thermal power for 800,000 kw. In all 44 power generating schemes will be undertaken during the Second Plan 25 hydro-electric and 19 steam power stations, and the consumption per capita will increase from 25 to 50 units. Energy generation is expected to increase from 11 billion kw. in 1955-56 to 22 billion kw. at the end of 1960-61.

Rural Electrification

Most of the power supply undertakings cater for urban areas only. A few large power systems serve the needs of the rural

areas also. Hitherto, electrification has made headway in Madras, Mysore, Travancore-Cochin, U. P. and the Punjab. By the end of First Plan out of 585 towns about 95% of the towns (555) with a population about 20,000 have been electrified. In the Second Plan, the electricity will be provided to small town with population between 5,000 and 2,000. In this group, there are about 40,000 small towns, of which only 40% have been electrified so far. During the Second Plan, 80 to 90% of these towns are expected to be electrified, and electric supply will reach 7,500 towns and villages in addition to those now served.

The following table shows the electrified towns and villages :—

Population	Total No. according to 1951 census	No. electrified in March 1956	No. likely to be electrified by March 1961
Over 100,000	73	73	73
100,000— 50,000	111	111	111
50,000— 20,000	401	366	401
20,000— 10,000	856	350	856
10,000— 5,000	3,101	1,200	2,659
Less than 5,000	5,56,565	5,330	13,900
Total	561,107	7,400	18,000

Multi-Purpose Projects

The multi-purpose projects are so called because of the manifold benefits they yield. Apart from providing irrigation facilities for additional food and commercial crops, the two other main benefits they confer are the control of floods, which cause enormous destruction to crops, property, cattle and human life every year and the generation of large blocks of hydro-electric power. Among the other benefits which accrue from the projects are the development of internal navigation, which relieves pressure on the railways, pisciculture, the provision of drinking water and the eventual development of the rivers for purposes of recreation. The importance of these Projects in the country's economic development is evident from the high priority given to them in the first Five Year Plan. Nearly a third of the total Budget for the First Plan was earmarked for irrigation and power projects and some of these are among the world's largest.

1. *Damodar Valley Project.* This multi-purpose project is intended to tame the turbulent Damodar river and its tributaries which overflow their banks and bring destruction and devastation to large parts of Bihar and Bengal. The full execution of the project will take many years. It will comprise 8 storage dams with hydro-

electric installations, a giant-2,00,000 kw. thermal power station, an extensive power transmission grid and an irrigation barrage with canals and distributories. The phase of development included in the First Five Year Plan provided for the construction of four dams at Tilaiya, Konar, Maithon and Panchet Hill, with an installed hydro-electric capacity of 1,04,000 kw., a barrage at Durgapur, with an irrigation-cum-navigation canal and a thermal power station at Bokaro with an initial installed capacity of 1,50,000 kw.

The all-concrete Tilaiya Dam, 112 feet high and 1,147 feet long, built across the river Barakar, was completed in record time at the end of the monsoon in 1952. It was formally inaugurated by the Prime Minister on February 21, 1953. Its 26-square mile reservoir will provide irrigation for 24,000 acres in the kharif and 75,000 acres in the rabi seasons. The Bokaro thermal station was commissioned on the same day as the Tilaiya Dam. It has an installed capacity of 1,50,000 kw. which will eventually be raised to 2,00,000 kw. The Tilaiya hydro-station went into commercial operation in February 1953 with two sets of 2,000 kw. each. It will meet the power requirements of the mica mines at Koderma and Hazaribagh district.

The Konar Dam 910 feet long and 160 feet high has a concrete section across the bed of the river and with earthen sections on either side. It was completed in May 1954. In addition to supplying water for cooling the Bokaro thermal plant, it will provide irrigation to 1,04,000 acres of land. Eventually, it is proposed to instal an underground hydro-electric power station below the dam with a capacity of 40,000 kw.

The Maithon Dam 1,300 feet long and 165 feet high on the Barakar river is one of the two key dams on which flood control and irrigation in the lower Damodar Valley will depend. It will store 11 lakh acre feet of water and the underground hydro-electric station near the dam will have a capacity of 60,000 kw. and will irrigate about 2·7 lakh acres of land.

About 73·4 per cent of the earth dam were completed up to the end of August 1955.

Work on the biggest of the four dams at Panchet Hill is in progress. Designed primarily for flood control, it will impound 12 lakh acre feet of water and will be 1800 feet long. A hydro-electric station will be built near the dam with a capacity of 40,000 kw.

The 2,271 foot long and 88 foot high barage at Durgapur in West Bengal was completed ahead of the target date and was formally opened by the Vice-President on August 9, 1955. It will irrigate over ten lakh acres of land through a network of canals

and distributories. Nearly 85 miles out of 1,552 miles of these canals will be navigable and provide an alternative means of communication between Calcutta and the coal fields.

2. *Tungabhadra Project.* This multi-purpose project, which is now a joint undertaking of the Governments of Hyderabad, Andhra and Mysore, comprises a dam 7,942 feet long and 160 feet high across Tungabhadra near Malapuram and a system of canals with power stations on either side.

The dam was inaugurated on July 1, 1953. The reservoir which has a water-spread of 133 square miles, will ultimately store 30 lakh acre feet of water. The two canals on either side will irrigate nearly 2·5 lakh acres in Andhra and Mysore States and about 4·5 lakh acres in Hyderabad. There will be two power stations on the Andhra-Mysore side, one below the dam and the other at the end of a 15 mile canal at Bukhasagaram. Initially, the stations will have two generating units of 9,000 kw. each. A hydro-electric station will be constructed below the dam on the Hyderabad side also, where two generators of 9,000 kw. will be installed in the first instance.

3. *Kakrapara Project.* This project financed by the Bombay Government, may be regarded as the first phase of the development of the Tapti valley. The construction of a weir 2,175 feet long and 451 feet high, on the rocky river bed near Kakrapara, 50 miles upstream of Surat, was completed in June 1953, the scheme is expected to irrigate 6·52 lakh acres in Surat district.

4. *Machkund Project.* A joint scheme of Andhra and Orissa this hydro-electric project is designed to harness the river Machkund which forms the boundary between the two States. A 134-foot high and 1300 foot long storage dam has been constructed at Jalalpur on the Machkund river to store 5·88-lakh acre feet of water. There will be three generating units, each with a capacity of 17,000 kw. Later, three more units will be installed and the total power output brought to 1,02,000 kw. The project will cost about Rs. 13·60 crores for generation only, one set was formally commissioned by the President of India in August 1955. The other two units are likely to be commissioned soon.

5. *Mayurakshi Project.* This important project undertaken by the West Bengal Government is mainly an irrigation project, though it also provides for the installation of a 4,000 k w. hydro-electric plant. The power will be supplied to Birbhum and Murshidabad districts in West Bengal and Santhal Parganas in Bihar. The first stage of the project was completed in 1951 with the construction of a diversion barrage at Tripala near Suri in West Bengal. The 113-foot high and 2·067-foot long Massanjore Dam,

the most important structure of the Mayurakshi Project, was completed six months ahead of Schedule in June 1955. The canals on either side will irrigate 6 lakh acres of land. A storage dam proposed for the Mayurakshi will have a capacity of 5 lakh acre feet of water and will provide rabi irrigation to nearly 1 lakh acres.

6. *The Bhakra-Nangal Project.* The Bhakra-Nangal Project in the Punjab envisages the construction of a dam, 680 ft. high across the river Sutlej near Bhakra Gorge, about 50 miles above Rupar in Ambala district. The total storage capacity of the reservoir is estimated to be 7.2 m. cubic ft. of which nearly 5.5 m cubic ft. will be available for hydro-electric power generation and irrigation purposes every year. The dam will form a lake 50 miles long and 2 to 3 miles broad. This dam would rank as the highest straight gravity dam in the world. Stored water would provide irrigation facilities for nearly 3.6 m. acres of land in the Punjab and Rajasthan and generate about 144,000 kws. of electric energy. An additional 170,000 kws. would be produced at Nangal hydro-electric canal which forms a feeder channel for the Bhakra canal system. The length of the is about 1,700 ft. and the width of the base at its widest point about 1,100 ft. During construction of the dam the river has been directed through two 50 ft. diameter diversion tunnels one on the right hand and the other on the left, going through hillsides. Each tunnel is $\frac{1}{2}$ mile long.

The Nangal scheme provides for an auxiliary dam or barrage across the river at Nangal after 8 miles down stream for Bhakra which will divert the river into Nangal hydro-electric canal and at the same time as a balancing reservoir for taking up daily fluctuations from the Bhakra dam and for meeting daily and weekly load variations on power houses on the Nangal hydro-electric canal. The Nangal dam is a massive concrete weir 1,029 ft. long 400 ft. wide and with its deepest foundation going down to 50 ft. below the river bed. The water way consists of 28 bays 30 ft. wide each provided with a gate which will head up the water about 50 ft. above the existing river-bed. The canal system of Nangal dam was opened on July 8, 1954, and the Ganguwal Power House on January 2, 1955.

7. *Kosi Project.* The most important scheme in Bihar is the Kosi Project. This Project will comprise a dam about 750 feet high across the Chattra Gorge in Nepal to store about 11 million acre feet of water and it will be capable of generating 1.8 million kws. of cheap power. There will be two barrages on Kosi, one in Nepal across the Kosi to control and stabilise the river channel and to divert its supplies into two canals, one on either bank for irriga-

ting about a million acres in Nepal territory; and a second barrage near the Nepal-Bihar border with two canals on the left and one on the right bank for irrigating over four million areas in the districts of Purnea, Darbhanga, and Muzzaffarpur in Bihar and will produce one million kws. of hydel power. This project is roughly estimated to cost Rs. 177 crores and its completion will take about 14 to 16 years. This will be a multi-purpose project for providing irrigation power, navigation, flood control, silt control, soil conservation, drainage, reclamation of water-logged areas, malaria control, fish cultures and recreation facilities.

8. *Hirakud Project.* The unified development of Mahanadi Valley as designed by the C. W. I. N. C., comprises three units namely, the Hirakud dam Project (10 miles from Sambalpur), the Tikepara dam project (130 miles downstream), and Naraj dam project (10 miles upstream of Cuttack), each with its own canal system and hydro-electric power installations. The three units are capable of independent development and also of forming an integrated part of the basin wide plan. It has been decided to make a start with a Hirakud dam project.

The Hirakud dam project comprises the construction of dam 15,007 feet long, and 150 feet high will be the longest in the world and will impound 67.5 lakh acre feet of water across the Mahanadi about 9 miles upstream from Sambalpur. This project after completion will provide irrigation to 1.8 million acres of land, generate 123,000 kws. and will also provide navigation facilities. This is in addition to nearly 1 m. acres of rich silted soil in the Mahanadi Delta which will be released from the flood menace for perennial irrigation. The total estimate for Hirakud is put at 70.78 crores. The first stage of the Project will be completed by June 1957. The Power Station is to be completed by 1957-58.

9. *Nayar Dam Project* This project will involve the construction of 600 ft. high dam to store 1.4 million acre feet of water on the river Nayar, a tributary of the Ganga. Hydro-electric plants to be set up will have an installed capacity of 200,000 kws. at Narora dam and 32,000 kws. at Vyasghat. The water released from the lake will be used to irrigate an area of 238000 acres and will also improve the irrigation of 1,068,000 acres at present irrigated by the upper Ganga canal system. It is estimated to cost 24 crores of rupees.

10. *Chambal Project.* Chambal is the largest river in M. B. and Rajastahn, having its origin in Vindhya range and falling into the Yamuna after flowing for over 600 miles. The river has a fall of about 2400 ft. The river flows over rocky surface and its banks are 2 to 300 ft. high. The river is 2500 ft. wide but at Chawasigarh the gorge narrows down to a mere 600 ft. This river has a total

drainage area of 55,000 sq. miles. The dam sites have been selected at 3 places—below Chawrasigarh fort, above Chulia falls and above Kotah city for power development, and for irrigation a barrage 2000 ft. long will be constructed about 6 miles down stream of Kotah. Two canals will be dug from above the barrage—one on the left side towards Bundi and the other on the right side through Kotah to M. B. With canals commanding over a million acres of land and will produce about 4 lakhs tons of foodgrains.

The first dam named after Mahatma Gandhi is being constructed near Chawrasigarh. This Gandhi Sagar Dam will be 1750 ft. long and 200 ft. high above the bed of the river. It will hold about 7 million acre feet of water. The surface area of the lake would measure 225 sq. miles. About 60,000 kws. of power will be generated and this dam will cost $10\frac{1}{2}$ crores of rupees and will be completed by 1960-61. Nearly 17·0 villages and 25000 people are likely to be affected by this development.

The second dam above the Chulia falls has been named the Rana Pratap Sagar Dam and the associated power project (the Bhupal Power Project). This dam will be 3,500 ft. long, and 90 ft. high above the average river bed. It will submerge about 60 sq. miles and will impound about 1·40 million acre feet of water. Water from this reservoir will be taken by means of two 15 diameter concrete—6800 ft. long into a surge tank and thence through steel pen stock pipes to the power house about 3 miles above Bhamsrodgarh. It will generate 90,000 kw. of power and will be ready by 1961-62.

The third dam will be known as Kotah dam and will be built in the river Gorge about 10 miles north of Kotah city. It will be 150 ft. high, 80 ft. wide, and 1800 ft. long. It will generate 50,000 kw. of power.

The whole project will cost about Rs. 50 crores in all out of which Rs. 40 crores will be shared by Central Government and Rs. 5 crores each by M. P. and Rajasthan Governments. It will provide water to over a million acres of land and will produce 4 lakh tons of foodgrains besides supplying an ultimate capacity of 2 lakh kw. of power. This power will be supplied to Sambhar Salt Lakes, Marble mine of Makrana, Soap stones mines of Jaipur and Bhilwara, and to Zawar mines of Udaipur and cement factory of Lakheri and to cotton textile mills of Kotah, Kishangarh, Bhilwara and Jaipur.

Difficulties

Following difficulties have been experienced in the actual operation of the irrigation, power and other projects :—

(1) "There has been an absence of a well-defined policy in regard to the purchase of plant and equipment. This has resulted in piecemeal purchase of diverse makes and types. Consequently

it has been found that while machines are on the waiting list for spare parts in some places, large quantities of spare parts have been found lying in stock in other centres and for which no use could be found." This has involved much loss of money and delay in the execution of the projects.

In order to avoid waste, the Plant and Machinery Committee (1953), has recommended that important mechanical equipment should be standardized so that such difficulties might be avoided. For this purpose a Standing Committee of the Experts and Ministers concerned should be set up and it should be charged "with the responsibility of ensuring that neither inflation of prices nor other disadvantages resulted from the proposed standardization. Equipment manufactures in India should get overriding priority as soon as it was available in the country, provided the quality thereof was up to the mark."

(2) Considerable amount of money and material has been wasted by wrong planning, careless management and supervision. According to Rau Committee, "Konar Project suffered a loss of Rs. 1.64 crores due to mis-management. Owing to the absence of competent technical advice, there was no proper appreciation of the magnitude of the problem involved in the construction of the project. Little wonder, therefore, that the corporation failed to pay sufficient attention to planning of equipment in the early stages. Overall planning was made impossible by frequent and numerous change in the design and programme."

(3) The river valley and other projects in India have been experiencing much difficulty in getting engineers and technicians of the requisite qualifications. There is a shortage of technicians, and the persons who are working on big projects are nervous about their future after the works on these projects are over. However, a Committee has now been appointed to go into the various aspects of the question of technical man-power requirements.

(4) The irrigation and power projects give rise to the problem of imposing a betterment levy and of increasing the irrigation rates. In Andhra, Bihar, U. P., M. B., Rajasthan, the water rates have been recently revised. Bihar, Madras, Punjab, M. P., U. P. and T. C. have accepted the recommendations for the creation of non-lapsable Irrigation Development (Ways and Means) Fund. For the present, the States report that they are not able to build up the fund owing to the non-availability of the resources. The betterment levy and the enhancement of irrigation rates in some of the States has imposed a heavy burden on the cultivator. Hence, it is necessary that while levying these charges care should be taken to consider the repaying capacity of the cultivators.

CHAPTER 10

CATTLE WEALTH

In India, according to 1956 livestock census, there were 15·8 crore cattle, 4·4 crore buffaloes and 3·8 crore sheep. It thus possesses 19% of the world's cattle, 18% of the world's goats and more than half the buffaloes. The following table gives the livestock statistics for 1945 and 1951 (in thousands) and 1956¹ :—

Livestock	1945	1951	1956	million
Cattle	13,67,39	15,50,99	158·9	„
Buffaloes	4,07,32	4,33,51	44·8	„
Sheep	3,77,28	3,88,29	38·7	„
Goats	4,63,02	4,70,77	56·6	„
Horses and ponies	13,98	15,14	1·5	„
Mules	45	60		
Donkeys	11,31	12,39		
Camels	6,56	6,29	6·6	„
Pigs	37,09	44,20		
Total Live-stock	26,84,40	29,22,18	307·1	

It has been worked out that the proportion of males is more than half (54·5%) amongst cattle, while in case of the buffalo the females predominate and are about three-fourths (72·8%) of the total. The reason for this disparity lies in the comparative utility of the two species. The oxen males are preferred to male buffaloes for agricultural purposes owing to their comparative lightness and active nature. Cows in the rural areas are maintained for producing bullocks rather than for milk. She-buffaloes, on the other hand, are considered to be better dairy animals than cows. The male buffaloes are neglected and many of them die or are sold for slaughter before they attain maturity.

In 1956, of milch cattle 96% of the cows and 94% of the she-buffaloes were located in rural areas and only 4% of milch cows and 6% of she-buffaloes were found in cities and towns.

The largest number of cattle is found in the Uttar Pradesh which possesses 15·4% of the total strength in the country. This is followed by Madras with 11·8%, while Madhya Pradesh, Bihar, Bombay and Rajasthan closely follow each other. The density of cattle is highest in Rajasthan closely followed by Kashmir, possessing as many as 88 and 81 cattle per 100 acres of cultivated area. Hyderabad, Bombay, Punjab, Uttar

¹ India, 1956, p. 151, and *Agricultural Situation in India*, October, 1956.

Pradesh, Bihar, Orissa, Madras and U. P. show the densities having 32,30,28,85,80,83,71, and 54 cattle per 100 acres respectively. This stands in fair contrast with Holland, Egypt, China, and Japan which have 38,25,15 and 6 cattle per 100 acres of sown area.

The position is somewhat different when the density per square mile is taken into account. West Bengal is densely populated with 288 animals per sq. mile, followed by Uttar Pradesh with 192 animals per sq. mile. The places with lowest density are Saurashtra and Rajasthan with 67 cattle per sq. mile each and Kashmir with 25 cattle per sq. mile. For the country as a whole the density works out to 115 cattle per sq. mile and 44 cattle for 100 persons.

✓ Although India ranks high among the countries of the world in the cattle population yet she is not the most densely cattle populated country of the world, nor has she a high ratio of cattle to human population, unlike the countries known for stock raising, as will be clear from the table reproduced below :—

Country	Cattle Population (000)	Cattle per sq. Mile	Cattle per 100 persons
Argentina	34,010	32	241
Austria	2,187	68	32
Australia	14,184	5	199
Canada	10,759	3	90
Denmark	3,184	192	79
France	14,273	67	35
India	139,971	115	44
Newzealand	4,628	45	268
U. S. A.	81,909	28	58

TYPES OF CATTLE

(a) *Working Bullocks.* India has approximately 58.41 million of working bullocks. Their largest number is found in the Uttar Pradesh followed by Madras and Bihar. The proportion of working bullocks to the total cattle population in any area depends upon the agricultural requirements of that area, type of bullocks available and the nature of crops generally grown. Generally speaking, areas which grow crops like sugarcane, cotton, wheat, etc., or have a heavy soil, possess comparatively a larger proportion of working bullocks than areas which are either hilly or sandy or which have more forests or have light soils or grow more of crops like rice, jute, tea, coffee. The proportion of working bullocks is 47.7% in the U. P., 43.7% Bihar, 43.0% in Bombay, 40.6% in Saurashtra and 40.5% in the Punjab. These areas grow mostly wheat, cotton or sugarcane, etc. On the other hand, this proportion is low in Rajasthan (28.4% sandy soil), Himachal

Pradesh, Vindhya Pradesh and Kashmir (29·1, 31, and 32·1 per cent respectively) mostly hilly and forest land ; Kerala, Mysore, and Assam (29·5, 32·7 and 33 per cent, respectively growing rice, jute, tea, etc.) On the whole the working bullocks form 38·6 per cent of the total cattle population in India.

(b) *Breeding Cows.* Approximately 46·34 million breeding cows comprising 30% of the total cattle are estimated to exist in the country. The largest number of breeding cows is found in Uttar Pradesh, 12·9% of the total population of breeding cows closely followed by Madras, Madhya Pradesh and Rajasthan.

(c) *Unserviceable Stock.* These comprise old and emaciated animals which are permanently unfit for work or breeding, but nevertheless kept by their owners, mainly on religious or sentimental grounds. The total number of such animals is 11·4 million or 10% of the total cattle in the country.

Importance of Cattle in National Economy

In so far as India is essentially a farming country the importance of efficient cattle for the stability and prosperity of the rural zones can scarcely be exaggerated. The number of livestock have an important effect both on the total output of agriculture and on the form in which the output appears.¹ "Cattle play a very important part in Indian agriculture. But unlike in other countries of the world whose cattle are maintained mainly for milk and meat in India these primarily are kept as draught animals for the plough or the cart as the camel, the horse, the donkey and mechanical vehicles are rarely used." Without them no cultivation would be possible, without them no produce can be transported.² Cattle supply the most important motive power for almost all agricultural operations such as ploughing, lifting water from the wells, and the transport of produce from field to the markets. Cattle are given much importance in Indian agricultural economy. Quality and quantity of cattle not only raise the social status of the Indian farmer but improve his economic condition materially. Thus in India without the cattle fields remain unploughed, store and bins stand empty, and food and drink lose half their savour for in a vegetarian country what can be worse than to have no milk, butter or ghee.³

Cattle provide us with milk. According to a Government publication, India produces 243 million mds. of cow milk, 266 m. mds. of buffalo milk and 11 m. mds. of goat milk—contributing in

¹ Russel, *Agricultural Production in Continental Europe*, p. 49.

² *Report of Rural Commission on Agriculture*, p. 169.

³ M. L. Darling, *Punjab Peasantry in Prosperity and Debt* (1932), p. 30.

all to 520 m. mds. of milk in the country.¹ According to the Planning Commission, "the total milk output of the country at the beginning of the First Plan was over 18 million tons. Of this about 38% is estimated as being used for consumption as fluid milk, about 42% for ghee and the rest for khoa, butter, curd and other products. Cows provide as little less than half and buffaloes a little more than half the total supply of milk."² India produces about 12 m. mds. of ghee and 2 m. mds. of butter.

Cattle also provide valuable manure and enrich the soil. Our cattle produce nearly 1,000 million tons of dung per annum, but unfortunately according to Dr. S. K. Dutta nearly 67% of the dung is burnt as fuel and remaining is utilised as manure.³ Dr. Lauder, an authority on Agricultural Chemistry tells us that one cow usually provides with 122 mds. of dung and 40 mds. of urine per year.⁴

Cattle serve in transport too. In the words of Royal Commission on Agriculture, "In most part of the world cattle are valued for food and milk; in India their primary purpose is draught for the plough and for the cart...." It is obviously difficult to place a definite monetary value of cattle labour; 300 to 400 crores of rupees, however, are assessed to be the value of cattle labour in India.

Miscellaneous products such as hides and skins are also an important source of income from cattle. India produces about $\frac{1}{5}$ of the world's skin. The total production of cattle hides is 16 millions and buffalo hides 5 millions, while goats skins amount to 21 million and sheeps skin, 16 million. The traditional Indian is described as bare-footed. Only 150 million pairs of footwear, roughly 3 pairs for 7 persons of our population as against 2 pairs per American or Englishman, are reckoned to be used in our country.

Our country possesses 38.7 million sheep and 56.6 million goats, i.e., more sheep and goats than U. S. A., Spain, U. K. China and Newzealand. India produces about 80 million lbs. of wool per year.

Thus it will be observed that cattle play a very important part in the economy of the country. Quality and quantity of cattle not only raise the social status of the farmer but improve his economic conditions materially. In India with cattle fields remain

¹ Ministry of Food and Agriculture, Govt. of India (1956), *Indian Agriculture in Brief*, p. 9.

² *Second Five Year Plan*, pp. 285-86.

³ Quoted by J. C. Srivastava, "Economics of Cattle Wealth in India," in *Rural India*, Vol. XIX, No. 5, 1956, p. 199.

⁴ Quoted by N. C. Joshi, "Economics of Cattle Health," in *Rural India*, Vol. XIX, No. 2, 1956, p. 80.

unploughed, store and bins stand empty, and food and drink lose half their savour for in a vegetarian country what can be worse than to have no milk ; butter or ghee.¹

Various estimates have been made regarding the contributions which cattle make to the nation. Marketing Department of the Government of India estimated the contribution to be about Rs. 1,900 crores annually,² while according to Sir Datar Singh, this amount is about 1,200 crores of rupees per annum. In the following table are given some of the important estimates of contribution :—

Products	F. Ware's estimate ³ (In crores of rupees)	Mulwan's estimate ⁴	N. S. Srinivasan's estimate ⁵	Dr. Wright's ⁶ estimate
1. Milk and milk products	540	450	800	300
2. Cattle Labour in agriculture (ploughing, etc.)	408	480	1,200	400
3. Manures	180	312	1,000	270
4. Transport for agricultural produce	107	...	300	...
5. Meat (20 m. mds)	} 30·12	58	120	...
6. Hides and skins			50	40
Total	1265·12	1,300	3,470	1,010

According to the Planning Commission, despite the large cattle population, in 1950-51, the net value of live-stock products amounted to only Rs. 664 crores or about 16% of the income from agriculture. This contribution can well be compared with other industries in India. This has been done by Dr. S. K. Datta :—

Item	Value in crores of Rs.
Iron and steel (1949-50)	50
Cotton textile and yarn	150
Jute	78
Sugur	54·5
Coal (3 million tons)	50·0
Total	832·5

¹ M. L. Darling, *Punjab Peasantry in Prosperity and Debt*, p.30.

² *Indian Veterinary Journal*, Sept. 1944, pp. 87-90.

³ R. K. Mukerjee, *Economic Problem of Modern India*, Vol. I, p. 39.

⁴ T. T. Mulwani: *Cattle Wealth of India*, in *Rural India* (Oct. 1950), p. 384.

⁵ N. S. Srinivasam, *Cattle Wealth in India*, 1953.

⁶ Wright, *Report on the Development of Cattle and Dairy Industry in India*.

Some Important Cattle Breeds

There are as many as 25 well-defined breeds of cattle and 6 well-defined breeds of buffaloes in India. These are distributed in the different parts of the country. High class specimens in each breed are limited in number and are found in the interior of the house of each breed. A few of these breeds are of the dairy type in which the females yield a very large quantity of milk, while the males are poor for work. A large majority of the breeds are of dairy type; the cows are poor milkers but the bullocks are of high quality. In between, there are a number of breeds which may be called "dual purpose," in the sense that the females yield more than an average quantity of milk, while the males are good working bullocks. These well-defined breeds are found in the dry parts of the country.

Tracts known for Cattle Breeding

The concentration of a large number of cattle is no index to the production of milk or higher standard of agriculture. Good breeds of cattle are confined to comparatively dry areas such as Haryana tract of the Punjab, Rajasthan, Saurashtra Madhya Pradesh and in such parts of other States where similar conditions exist. Pasture in these dry areas may be good in quality but is often scarce and the uncertainty to rainfall makes it obligatory on the part of owners to grow crops, the residue of which provides a good supply of fodder for cattle. Conversely in tracts with a humid climate which are subject to heavy rainfall or are provided with ample irrigation a very poor type of cattle is found in spite of the availability of grazing.

Tracts with Poor Cattle

It is a well-known fact that in rice-growing tracts, viz., Assam, West Bengal, Bihar, Orissa, Madras and Travancore, etc., cattle are generally found to be greatly deteriorated, both as regards their physical development and capacity for work and milk production. They are also more prone to diseases and reproductive defects are common to them. In these areas the cattle being inefficient, the number of cattle required for agricultural purposes and for milk production is necessarily larger, even 3 to 4 times as compared to that of other areas where good cattle exist. The larger the number of cattle census greater is the strain on the available pastures which results in their further deterioration, thus producing a vicious circle. In Travancore and Cochin where cattle are of mongrel, nondescript type and where there are no recognised breeds, cows are notoriously poor milkers. The bullocks are puny and weak and on this account the cultivators are generally unable to adopt and make use of modern, efficient and labour-saving implements.

Tracts with good Cattle

Various Indian breeds are noted for their milk-yielding capacity. In Bombay there are two important breeds, *viz.*, *Kankraj* breed useful for draught work and *Damgo* breed of the Western Ghats useful for work in the rocky regions. In the South Saurashtra *Gir* cattle is well known for their milking capacities. The uplands of M. P. offer good grazing grounds and facilities, where *Malwa* breed useful for agricultural work in the field is to be met with. *Hansi* or *Hariana* in the Punjab and Montgomery district, having a scanty rainfall and extensive pasturage, are the best. The improved breed of the *Sahuwal* cattle breed at Ferozepore having an average lactation yield of nearly 7,000 lbs. of milk and can stand in comparison with European stock.

Unlike cows, buffaloes thrive best in the areas of moderate heavy rainfall as they require plenty of water for their daily bath. They are dual-purpose animals useful both for milking as well as draught. They live on coarser grass and even then they are heavy yielders of milk. *Murra* buffalo of the Punjab has an average of 400 lbs. of milk per lactation period while the better types may yield as much as 1,000 lbs. The *Rohtak* breed are also famous for milk. The *Kathiawar* or *Zafarbad* buffalo are large in size and the daily yield of milk is 30 lbs. *Deccan* breeds are more serviceable for heavy cartage but they are poor milkers. The buffaloes are better cared for because they are the more important milk cattle. Her milk is richer, containing as it does from two to three per cent more butter fat than that of ordinary cow, and supplies the major part of the demand for milk. She is more profitable to maintain, as she possesses a remarkable ability to convert coarse fodder into milk.

The following table gives the important breeds of cattle of both the species in India :¹

State	Oxen	Buffalo
1. Madras, Mysore, and Andhra	Kangayan, Amritmahal Hallikar, Alambadi, Ongole Krishnavalley Bargur., Nellore	
2. Bombay	Dangi, Gir, Kankrej, Jaffarbad, Mehsana Khillari	Surti., Pandher- puri
3. M. P.	Gaolao, Malvi, Nimari	Nagpuri
4. U. P.	Kanwariya, Kherigarh, Mewati, Ponwar.	

¹ Vide, *Cattle Marketing Report and Miscellaneous Bulletins*, Nos. 17, 24, 27, 46, 47, 54 of the Indian Council of Agricultural Research.

State	Oxen	Buffalo
5. Hyderabad	Deori, Ellichpur.	
6. Bihar	Bachaur, Purnea, Shabbadi.	
7. Punjab and Delhi	Haryana, Hansi Hissar, Nili Ravi, Murrah Shahiwal, Montegomery	
8. Rajasthan	Malvi, Mewati (Kosi) Nagore, Rath, Thar- parkar	

Present Position of Cattle in India

In view of the great importance of cattle in Indian agriculture their present position is deplorable. Malnutrition is perhaps the greatest single factor responsible for the degeneration of cattle to their present state. Promiscuous mating, improper and insufficient care, ignorance and lethargy of the people are some of the atrocities which are responsible for degeneration.

The causes of their deterioration in the condition may be discussed under the following heads :—

- (i) Lack of adequate and proper fodder supply.
- (ii) Want of proper care.
- (iii) Lack of good breeding stock.
- (iv) Diseases and pests.

1. Lack of Adequate and Proper Fodder Supply

The majority of the Indian cattle are seriously underfed, particularly the cows in rural areas. In India stall feeding is rare and the grazing and the grasslands in the country are hopelessly overstocked. Because with the rapid growth in the size of India's population and the growing pressure on land, the absence of alternative avenues of employment, the quantum of land available for grazing has declined considerably.¹ The natural grazing lands are usually to be found within the areas classed for statistical purposes as 'forests,' 'cultivable waste' and 'not available for cultivation.' But forests, as a source of fodder supply are of limited value due to stringency of the forest laws and the policy of enclosure. According to John Russel about 10% of the cattle of the five States (possessing such forests) have access to forest grazing and where grazing is unrestricted the quality of pasturage has rather deteriorated because of early practice of

¹ "Owing to the increase in the requirements of the food for human population, areas, where grazing was possible, have steadily diminished. Large numbers lead to poor feeding comes in the way of attempts to raise productivity. There is thus a vicious circle which it is difficult to break (*Second Five Year Plan*, p. 282).

over-grazing. Cultivable wasteland, though another source of fodder supply is useless for grazing purposes because it does not produce any useful herbage. Similarly a very large portion of the land marked as "not available for cultivation" is not useful for grazing because it is absolutely barren. Hence, natural grasslands are utterly lacking.

The ordinary cultivator in India who treats his plough cattle and she-buffalo well when he can, usually lets his cow, young cattle and he-buffalo to thrive as best as they can by grazing on the common ground or by reared crops. That most of the Indian cattle are underfed can be seen from their very appearance, the slow rate of their growth, their late maturity and the long dry periods of the cows. Majority of the Indian cattle obtain their requirements from whatever grazing is available from straw and stalk and other residues from the human foodstuffs, and are starved seasonally in the dry months when grasses wither.

Over the greater part of India there is an acute shortage of fodder from December to July and the cattle are reduced to mere bags of bones. By this time the insufficient supplies of stored fodder become so much depleted that the ration of the cattle of the poor farmers undergoes serious diminution. Even in ordinary years farmers feel the pinch in the months of May and June. It is a common sight during these months to see herds of cattle wandering about the village grazing grounds and licking the bare fields after harvests in the hope of picking up something to keep the body and soul together. The seasonal shortage is felt by all classes of farmers, and if the monsoon is delayed even the richer farmers have no reserve of fodder.

The chronic starvation on the part of the cattle accounts to an average of one-third of the total cattle mortality. The starvation of this period cripples our cattle, "makes the cow an irregular breeder that reduces her natural milking qualities until she is unable to suckle a healthy calf, that leads to scarcity of good bullocks, and that creates the urge which covers the village grazing grounds of India with useless and decrepit cattle." Many plough bullocks are sold off in winter or their rations are ruthlessly decreased whenever they are not worked in full, while milch cattle are kept on after lactation on poor and inadequate grazing. Scrub bulls are allowed everywhere to cover heifers which are generally immature, so that herd multiplies although many of the animals do not get a chance to live.

Mr. Leake writes in this connection that during the rains there is abundance of green fodder, both in the natural growth of uncultivated areas and in such crops as *Chari* grown to supply

fodder. With the cessation of the rains and the coming of the cold weather natural growth ceases and the fodder crops ripen off. During dry months of the year, grass is very poor because dry weather hinders its growth. As compared with the grazing lands in temperate climate, Indian lands are of very little use to the cultivator even when they are readily accessible, not because the grasses are bad but because they are abundant and of high feeding value only for a very short period of the year. But where the supply of grass on grazing lands is more certain and reliable, the quality of cattle is better and it is here that some of the best quality cattle in India are reared.

Fodder is limited to the dry stalks of the jowar and maize and to the *bhusa* (in silo-pit) produced in the cold weather cereals, to which must be added the weathered grasses of the waste lands. Grains and pulses are little used as cattle food. On these fodders having a small oil nutrient value, eked out with such little natural grazing as is available the cattle has to struggle along till the succeeding rain brings forth a new supply. Moreover, within this period falls the season of maximum demand for power, for agricultural purposes, for threshing, ploughing and carrying loads. Thus in a year of rains, the cattle die by hundreds, and the survivors become inefficient workers for some time. No sufficient excess of fodder is produced in good years and owing to the bulky nature of the fodder it is impossible to import it from other countries to make up the internal deficiency even if the external resources were available. The actual shortage of the fodder can be easily realised when we compare the conditions of fodder supply in India with those in England, where three acres are necessary for supporting 4 heads of cattle, in U. P. not more than $\frac{2}{3}$ of an acre of less fertile land is available for grazing of the same number of cattle. The result is the heavy cattle mortality. In the Punjab, *Chambri* grass is the principal fodder but shaftal, berseem, and lucerne can be grown as green fodder. In M. P. the fodder situation is somewhat satisfactory than the adjoining provinces. It is in the cotton belt that the jowar is chiefly cultivated as the fodder crop, while cottonseeds, also provide a very nutritious food with the result that cattle is strong and efficient. In the wheat belt though grazing lands are rare but *Kans* (a grass of low nutritive value) grows over wide areas and hence no fodder crop is raised, with the result that the cattle fed on it are weak and incapable to bear the burden. In the rice belt, as also in Bengal, green catch crop is utterly lacking. Muddy straw is the only available fodder which offers a bare sustenance for cattle. In Bengal the banks and slopes of the embankments of public roads are the only grazing grounds and the cattle subsist mainly on paddy straw, paddy-husks and the coarse grass which grows in tanks almost silted up. Just after the rice crop has been over they get enough

to eat, but at other times of year they are half-starved. The lack of sufficient pasture, the absence of good fodder and the inability of the peasants to stall-feed their beasts have led in Bengal to a deterioration of cattle. In the Chattisgarh division of M. P. a variety of grass of low nutritive value (*Sukla* or spear grass) grows in abundance but it being short-season grass provides no grazing in June and July when there is a real need for the fodder. Hence, the cattle of Bengal and M. P., are usually inferior both for milking and draught purposes. Western Ghats, enjoying rains varying from 80 to 150 inches are quite unsuitable for the growth of good quality of grass and hence the cattle rearing is not largely carried on there. But in Mysore, Nellore, and Coimbatore upland areas having a moderate rainfall and natural drainage are conducive to the healthy growth of good grass and it is here that some of the best cattle breeds of India are found. Gujrat is also suitable for good cattle. The grass and various leguminous crops are largely produced owing to the alluvial loamy soil in the area round the Runn of Cutch.

The following table gives the feeding standards of livestock in India¹ :—

Feeding Standard

(Pounds per head per day)

Live-stock (at rest)	Maintenance		Work (8 hr.-Poughing)	
	Digestible Crude Protein	Starch Equivalent	Digestible Crude Protein	Starch Equivalent
600	0.26	3.6	0.86	6.8
800	0.31	4.6	1.00	8.5
1,000	0.37	5.7	1.21	10.4

It is needless to state that in U. P., Bihar, Orissa, and Bengal the cattle cannot obtain their minimum feeding requirement at all. The competition of both the human and bovine population for maintenance on small holdings which yield both food and fodder crops has resulted in the steady deterioration of animals' food supply and of their breed and efficiency. It is a striking paradox that the States which have the smallest crop areas per capita maintain the largest number of cattle, *i.e.*, the deficiency in cattle food is greater in the thickly than in the thinly populated areas. According to Dr. Burns the smallest deficiency is in the region in which rainfall is under 30" and the greater in that in which it is over 70 inches.

¹ R. K. Mukerjee, *Food Planning for 400 Millions.*

The region with a rainfall of between 30" to 70" lies between these two extremes.¹

As Sir John Russel observed, the amount of food produced is insufficient for the large number of cattle. The Advisory Board of I. C. A. R. and the enquiry of Dr. Wright estimated that the production of roughages (fodder crops's traw of cultivated crops and grass), and concentrates (oil-cakes, cotton seeds, cereals and husk) amounted to 175 and 3.7 million tons against the total requirements of 270 and 15 million tons respectively. Dr. Wright further observed that to produce 800 million mds. of milk, the milch cattle alone would require 29,55,000 tons of digestible proteins and 2,675,000 tons of digestible crude protein, but the available supply amount to less than this requirement. The Expert Committee on the Prevention of Slaughter of Cattle concluded that the present fodder and other resources of the country are grossly inadequate even for maintaining the existing cattle population. The Planning Commission has estimated that, "the quantity of fodder available is about 78% of the requirements, while the available concentrates and feed would suffice only for 28% of the cattle." But contrary to this observation, the following table

1 These regions respectively include (1) Punjab, N. W. F. P. Sind, Baluchistan (new all in Pakistan) and a part of Bombay lying to the east of Western four Ceded districts in Madras. The cattle in this region may be said to Ghats and be fairly adequately fed for here comparatively large area is under fodder crops. (2) Bihar, Orissa, M. P. and U. P., eastern part of Madras and the northern part of the Bombay presidency having rainfall between 30" to 70" where there are smaller areas under fodder crops. (3) Those parts of Madras and Bombay which lie west of the Western Ghats, Coorg, Bengal and Assam. The position of feeding is worst here.

The differential productivity and capacity of work of cattle in these regions as well as the distribution of cattle among them may be seen from the following table which relates to undivided India :—

Region	Areas of Cultivated Land (Million of acres)	No. of animals		No. of acres cultivated		Milking Capacity (lbs. per Annum)	
		Male Cattle	Milch Cows	She- Buffa- loes	Bul- locks per pair	Cows	He Buffa- loes
		(Millions)					
1. Above 70"	48.6	12.7	11.0	0.7	7.6	371	732
2. 30-70"	137.3	28.1	20.4	9.5	9.8	463	1030
3. Below 30"	78.2	8.2	5.8	4.8	19.2	774	1615
Br. India	264.1	48.9	37.3	15.0	10.8	484	1216

¹ Vide, Dr. W. Eurns, *Technological Possibilities of Agricultural Development in India*.

reveals that the cattle fodder is in excess of the actual requirements, for the year 1952-53 :—

	Total require- ments	Available at present	Shortage	Surplus
Dry fodder	1680	1300	380	...
Green Agricultural fodder	2890	1100	1780	...
Green fodder and grazing in jungle	2760	5270	...	2510
Total	7330	7680	2160	2510
Cereals-oilcakes and cotton seed	289	138	151	...

Investigations clearly show that the existence of goitre, osteomalacia, and other bone troubles, emaciation, birth of weak calves and pica are due to malnutrition. Animals living on imperfect diet have a greater tendency to infections of the respiratory and gastro-intestinal tract, and of stone formation in the bladder. Other types of losses, such as those resulting from irregular breeding and abortion of non-infectious origin are also due to faulty dieting. Calcium and Vitamin A deficiency in the diet of cows is also found to produce blindness among calves. Prolonged malnutrition or famine leads to the suppression of oestrus. Thus in India in draught years village cows do not bear calves or bear them only in alternative years of even only once in three years when the body reserves for minerals and other essentials are established.

2. Want of Proper Care of Cattle

Another important cause for the deterioration of Indian cattle is the want of proper care on the part of the Indian cultivator. He does not take as good care of his cattle as his Western confrere does. That is because of their poor quality, and the deterioration in quality is due *inter alia* to lack of adequate care. But the cultivator feeds his bullocks better than his cow, because it pays him. He feeds his bullocks better during the busy season, when they work than during the slack season, when they remain idle. Further, he feeds his more valuable bullocks better than those less valuable but he neglects the Indian cow. This has very deleterious effect on the breed of the cattle. Though a cow of better quality is better looked after than ordinary breeds, but a larger proportion of Indian cows are more mismanaged, as they are of ordinary breed and yield about only a seer of milk per day for about seven months in a year. It is for this reason that he neglects his cow. "Broadly, it would be true to say that if there is any fodder available after the draught cattle are fed she gets

it or shares it with young stock ; for the rest she is left to find food where she can. Where the cow provides some milk for the household, as well as for her calf, cultivators try to spare her two or three pounds of a mixture of cotton seed and bran of oilcakes or pulse, but when her milk fails, the ration is withdrawn and she is turned adrift to find a living for herself on grazing." This neglect reduces milk yields of the cow and the quality of breed.

In the words of Royal Commission on Indian Agriculture, "In whatever respect Indian cattle may be lacking, they do not lack in number." The Cattle Utilisation Committee estimated that about 11·4 million adult or 10% of the cattle population are unserviceable or unproductive. The fact is that the productive value of the cattle is not commensurate with their number. In fact, the large numbers of diminutive cattle are a serious drain on the country's fodder supply and eat into the profits from agriculture. Weight for weight, a small animal consumes a much larger quantity of food than a bigger animal. Thus an animal weighing 500 lbs. is estimated to consume not half but about two-thirds of what an animal weighing 1,000 lbs. would consume. The non-recurring expenses on an unproductive cow for a year in Gosadan in the form of putting up a chapper and wires for fencing is Rs. 20 and the recurring expenses comes to Rs. 10 only.

Their poor quality, as they are undersized and weak, compels the farmers in India to keep a large number of cattle to do a given amount of work, and this creates a vicious circle. The increase in the number of cattle makes impossible their proper feeding and this leads to a further deterioration in quality. As the Royal Commission has summed it up so well, "The worse the conditions for rearing efficient cattle are the greater the number kept tend to be. Cows become less fertile and their calves become undersized and do not satisfy cultivators, who in the attempt to secure useful bullocks, breed more and more cattle. As numbers increase the pressure on available supply of food leads to still further poverty in the cow. As cattle grow smaller in size and greater in number the rate at which conditions become worse for breeding good livestock is accelerated. As cattle become smaller the amount of food needed in proportion to their size increases. But the religious susceptibilities lie in the way of slaughter of decrepit and useless cattle and hence the cattle, however, weak and poor are allowed to live. The number of cattle have become so large and their efficiency has fallen so low in India as results of the process having advanced so far that the task of reducing the number of useless animals and of reversing the process of deter-

ioration is now extremely difficult. In several ways religious and social sentiments have aggravated the difficulty. To kill a cow or a bullock is a deadly sin in Hinduism. Hindus object to sell because it is usually sold to a butcher and leads to the slaughterhouse. Rather than selling the cattle to the cattle dealer he sends them to a *Gowshala* or lets them loose to die. In one case breeding can be controlled and in the other bulls wander about the fields consuming or damaging at least three times as much fodder as they need, and covering as they please. The difference is of great importance in a country where cows are of all sorts and good bulls far too few.¹

3. Lack of Good Breeding Stock

Another important cause for the deterioration of the quality of our cattle is the lack of good breeding stock. There are villages, where no breeding bulls are to be found and the result is that frequently the cultivators have to travel about six to eight miles to take the advantage of a good stood bull or a male buffalo. The scarcity of the stud bulls and buffaloes is due to the fact that no private individual maintains stud bulls of good quality for to do so is uneconomic for him. Secondly, that the methods of scientific breeding are unknown to the Indian cultivator.

4. Cattle Diseases

Cattle diseases are also responsible for the decay in the quality of our cattle. In the Indian villages, cattle suffer from a number of contagious fatal diseases like the rinderpest, foot and mouth disease, anthrax and black quarter. Animal parasites like round worms, flat worms and protozoa also cause wasting diseases. But due to lack of sufficient number of efficient and experienced veterinary doctors, cattle diseases are not properly diagnosed and treated resulting in heavy cattle mortality. In the words of Royal Commission, "It is indeed the fear of loss from disease that tempts many to keep a larger stock than is absolutely necessary and thus increases the difficulty of feeding cattle properly." Epidemic diseases cause tremendous damage. A large number of cattle, attacked by disease, which escape death, find their vitality sapped and health permanently injured. This affects their milking qualities and their ability to produce healthy draught bullocks. During the period of 1933-34 to 1937-38 the average number of deaths was about 2½ lakhs per year. Of these deaths accounted for by the various diseases were : Haemorrhagic Septicaemia 18.5% ; Black Quarter

¹ Darling, *Wisdom and Waste in the Punjab Village*, p. 7

16.1%. It will be noted that rinderpest alone accounts for more than half of the total number of deaths due to contagious diseases.

Lines of Improvement of Indian Cattle

There are four aspects of cattle improvement, *e.g.*, (a) feeding, (b) breeding, (c) management, and (d) disease control.

(a) GOOD-FEEDING

The very first step towards the improvement will be to improve enough suitable feeds for the cattle. This can be assured through (a) an economical use of available supplies and (b) an increase in the supplies of fodder (more particularly those suitable for milk production).

The solution of the fodder problem depends on the fact that bold and honest efforts are made towards its realisation. The first step that may be taken in this direction should be to make the most efficient and economical use of the available supplies of fodder. This necessitates that indiscriminate grazing should be checked and that the agriculturists should be taught, through proper propaganda done by the various Agricultural Departments, the advantages of proper grazing. He should be induced to hay making (according to the Royal Commission on Agriculture, 'he has been a grass-cutter but never a haymaker') and proper storage of dry grass. Feeding value of the grasses depends upon cutting them at the right stage of growth which will not only improve the quality of fodder but will also materially increase the palatability of the fodder, both grass and straw because grass, if cut before it becomes overripe, would be more tasteful to the cattle and of greater nutritive value, but when the grass becomes 'dead ripe' the quality of the straw is always inferior and will not be liked by the cattle. But the cultivator is ignorant of the right time when the grass is to be cut. It is the duty of the Agricultural officers to tell the cultivator the stage at which grass may be cut to conserve the feeding value of the fodders; and that experiments should be made to secure a better and more palatable straw by earlier harvesting.

(i) *Storage of Available Fodder.* Further, the cultivator should be taught the methods of fodder storage. The preservation of the fodder for dry seasons in the form of silage is of such potential value in improving the nutrition of the cattle (particularly of growing stock and milking cows) that every effort should be made to encourage its production. The *silo*, whether the pit-silo, starch-silo or the tube-silo as the varieties are, preserves the fodder in a fresh and good state making it highly palatable for the animal to eat during out of seasons or scarcity of fodder. Wherever cultivators have resorted to silage, it has proved of great value in feeding

his cattle in dry season but the progress in this direction is not very encouraging.

The green fodder available during the monsoon can be conserved for periods of fodder scarcity by the method of silage. The process consists commonly in digging pits of a given size, filling them with green succulent fodders and weighing them with earth or stones. The Royal Commission on Agriculture estimated that a pit 10 ft. long, 8 ft. wide at the surface and 7 ft. wide at the bottom and 8 ft. deep would hold all the silage that a cultivator owning 3 or 4 cattle would need to bring his stock through the season in good condition. The Rural Co-operative Societies should undertake to conserve fodder through silage for distribution during the dry season. The Forest Department should permit such societies to remove grass from the Reserve Forests free of cost for ensilage purposes. The Agricultural Dept., should assist societies undertaking silage making, use of mechanical chaff-cutters as well as proper accounting of the receipt of green fodder and distribution of silage.

Supplies to deficit areas from surplus areas should be organised through a Basic Plan mutually agreed to by States. Imports of cattle-feeds may also be made from abroad to relieve temporary shortages, if possible. When prices of concentrates are beyond the purchasing power of milk producers, supplies, especially to institutions like Co-operative Milk Unions and dairy farms, should be organised and subsidised. The production of succulent fodders and legumes should be encouraged to the maximum possible extent by providing facilities of irrigation, seeds, manures and technical guidance to the cultivator-producer. Facilities for the procurement and distribution of green and dry fodders to areas where production is not possible, should be provided and the supplies should be subsidised wherever prices are high. An adequate and regular supply of clean and sweet water is very necessary for the health of cattle and milk production. Wherever necessary, wells should be renovated, new wells sunk, water raising devices provided and water storage tanks and troughs constructed.

(ii) *Extension of Grazing Lands.* To solve the problem of scarcity and shortage of fodder supply effectively, available sources of fodder supplies will have to be supplemented. This can be done by (a) making additions to grazing areas and (b) the cultivation of fodder crops. Besides, this the supplies of fodder can be increased by the increased cultivation of fodder crops and leguminous crops such as berseem, lucerne, jowar, arhar, and millets and various exotic grasses such as Napier grass, Sudan grass and Guinea grass, etc. At present the tendency is to put more of area under cash

crops, which give better returns than to the fodder crops. All possible encouragement should be given to the cultivators to induce them to put more of acreage under such crops which are suitable as cattle feeds. Crops which are more nutritious and have better yields per acre should be cultivated in order to get yields per acre from the same area. Sir John Russel has suggested that a number of fodder crops should be cultivated in India, as they would affect greatly in improving yields and in total output. Leguminous fodder crops in addition to increasing the quality of farmyard manure enhance the fertility of the soil on which they grow; they cannot usually be fed alone and generally are mixed with non-leguminous crops. ✓ The feeding of these fodder crops will be a marked improvement in the quality of the cattle and their milk yield. The fact that fodder crops are used as supplement to grass probably explains why some of the best developed cattle in India are produced in dry areas where the growth of grass is sparse. The cattle reared on coarse rank grass in the wetter parts of India are of poor quality and of little use either for milk or draught."¹

(iii) *Rotational Grazing.* On the village pastureland rotational grazing should be compulsorily introduced everywhere. On account of over-grazing, pasturelands deteriorate and it is essential that some pause should be given to grasses for recoupment. If one-half of the pasturelands is closed for some months and the remaining half is opened for grazing there will be more grass for the village cattle, and at the same time they can have exercise in the open. At present, village pasturelands are more in the nature of exercise grounds and provide very little grass. If the policy of closure and rotational grazing is introduced more food will be available for the cattle.

(iv) *Nutritive Cattle Feed.* The diet of the Indian cattle is deficient not only quantitatively but also qualitatively. Hence, efforts should be made to increase the available supplies of cattle feed rich in protein. Investigations made by the Indian Council of Agricultural Research have shown a mixture of oilcakes, bran, barley and gram husk to be a good protective food. The quantity of this diet which is suggested $1\frac{1}{2}$ seers for the first $2\frac{1}{2}$ seers of milk and thereafter half a seer of mixture for every additional one and a half seers of milk. The U. P. Agricultural Department have recommended a mixture of 50% cakes, 20% bran and 30% barley and have found that three-fourth of the protective requirements can be replaced by berseem grass at the rate of five seers for every seer of mixture. The grass serves the purpose of energy-giving

¹ J. Russel, *Report on the Working of I. C. A. Research*, p. 42.

food as well. Lastly it is also preferable to give the cattle *Lahori* salt up to one per cent of the mixture.

Protein-rich concentrates such as cotton seed and linseed cakes are by far the most valuable sources of nutrients for milch cattle. The problem, therefore, revolves round the supply of oilcakes. It has been estimated that there are available in the country about $14\frac{1}{2}$ lakh tons of oilcakes, and it may be had from 21 lakh tons of oilseed. In order to ensure greater inland supply of oilseeds for the cattle and for manuring the fields, it is necessary that the oil-crushing industry should be developed.

(b) CATTLE BREEDING

The value of breeding animals by scientific selection and mating has been recognised by the farmers in almost all progressive countries. But unfortunately very little attention has been paid by the Indian peasants to the improvement of the breed and the importance of breeding. Cattle are hardly enclosed and good and healthy cattle are allowed to mix with the weak and degenerate types. This leads to a steady deterioration in quality. Professional cattle breeders have existed in India for many centuries and they pursued traditional but skilful method of selecting and tending cattle, but these herdsmen have practically disappeared from the country owing to the extension of irrigation and consequent lack of common grazing grounds in most State. Unlike in the Western countries, in India the bigger landlords have hardly attempted to raise good breeds of cattle. Attempts at improving the cattle by the selection and improvement of the best breeds have to be made in India by the Central and State Departments of Agriculture. There are government cattle farms in the various State (for instance at Hosur in the Madras and Hissar in Punjab) in which pedigree bulls are bred and reared and these are sold out to the private bodies and individuals in the villages.

(a) *Breeding Policy.* As the stock of milk and draught animals has been decreased considerably due to indiscriminate slaughter, it is essential to build it up again and care should now be taken that inefficient or undesirable breeds do not get multiplied. This is rather a long-period problem and calls for therefold measures :

Firstly, better breeds should be popularised. The cattle shows which have been organised in different parts of India by the All-India Cattle Show Society should be multiplied manifold. Material progress can be made by increasing the number of good stud bulls. But at present, the number of such stud bulls fit for breeding is very small. It has been estimated that against our requirement of 250 stud bulls we have only one available for this purpose. According to an estimate made by the Royal Com-

mission on Agriculture India needed about a million breeding bulls. The present number of over 10,000 of pedigree and approved bulls represents only one per cent of the Indian requirements. Further the number of new bulls issued each year is only slightly greater than that needed to replace existing animals on a 10 or 15 per cent basis of animal wastage. Dr. Wright suggests that the progress in this direction can be accelerated by providing a large number of approved bulls bred in village conditions in selected breeding tracts. "The farm-bred bulls of the guaranteed pedigree, though more reliable are seriously limited in number, unsettled and difficult to handle, and more costly to rear. Village-bred bulls on the other hand can be reared at almost negligible cost to Government. Moreover, the Government purchase of village-bred bulls for distribution would give invaluable direct encouragement to progressive breeders." The number of stud bulls should rapidly increase for at present there are thousands of villages without a stud or a male buffalo. This acute shortage to some extent can be met by the artificial insemination centres started under the scheme of the Indian Council of Agricultural Research. These centres offer two advantages to the public : (1) Approved bulls of suitable breeds will be available for service for the village cattle, and (2) Animals which ordinarily cannot be successfully impregnated due to some physiological defect can be served best if the landlords, well-to-do and service-spirited persons, institutions and cattle societies lend a helping hand.

Secondly, arrangements should be made for making better breeds of bulls available for the purpose of crossing on easy terms. To meet the paucity of good breeding bulls in the country full use should be made of the existing organisations and institutions like *Gaushalas* and *Pinjarapoles*. It is estimated that there are at present about 3,000 *Gaushalas* in India with a population of over six lakh heads of cattle which are being maintained at a cost of over 30 million rupees per annum. Out of the total population of about 6 lakh cattle in these institutions there are about 20 per cent (1,20,000) classified as good dairy cattle. There are other 20 per cent (1,20,000) good for breeding though not highly productive. And the remaining 60% (5,60,000) are old, infirm and unfit for breeding. At a very conservative estimate it is held that when recognised on improved lines, these institutions will provide about 25,000 males fit for use as stud bulls every year for replacement in the *Gaushalas* and for free distribution in the neighbouring areas for the improvement of the village cattle. In addition to this, there will be about the same number of males, available for bullock work and 50,000 improved female calves every year.¹

¹ Datar Singh, *Reorganisation of Gaushala & Pinjarapoles in India*, pp. 9-10.

Thirdly, along with the provision of improved stud bulls, it will be necessary to castrate all the useless and unfit males in the villages, otherwise the good results obtained by the use of improved bulls will be undone by the bad ones. Not only scrub-bulls but also uncastrated bullocks used for carts should be castrated to prevent damage to the breed. Ringing of bad cows so as to make covering impossible should also be introduced and popularised. No improvement worth the name is possible in cattle breeding unless it is rigorously supplemented by castration of useless animals. But it is unfortunate that in view of the large number of useless and decrepit cattle in India the progress in the castration of the inferior males is rather very slow. Whatever castrations have been done are in the Punjab, M. P., and Bombay. Dr. Wright advocates "the intensification of castration measures in selected areas." He says, "a policy which includes (1) the distribution of pedigree bulls (bred in Government farms) to selected areas, (2) the registration of progeny in those areas (to build up a reservoir of approved bulls for further distribution), (3) combined with castration of all inferior male stock and (4) if possible the inculcation of all local stock against rinderpest, would represent an ideal method of effecting livestock improvement in India."

(c) BETTER MANAGEMENT

There are several aspects of management which improve the efficiency of milch cattle. The calving interval of village cows is 18 to 20 months and 18·03 months for the buffaloes more than half of which period is dry.¹ By skilled management it is possible to reduce the dry period by at least 3 months which will improve production by minimum of 15 per cent. In seven important breeds the average yield during the lactation period was found to be 1·73 lbs. for cows and 3·99 lbs. for buffaloes but the experimental results show that milch cattle have tremendous potentiality and the yield can be trebled. The results of some experiments are tabulated here :—

Centre of Experiment	Breed of Cattle	Average lactation yield under village conditions	Well Managed (in lbs.)
1. New Delhi	Sahiwal	1344	Over 4500
2. Karnal	Haryana	986	3600
3. Madras	Ongole	1236	Over 3000
4. Chharodi & Surat	Kankrej	920	upto 2500

¹ Indian Council of Agricultural, Research *Miscellaneous Bulletin*, No, 22 (1939).

(d) CONTROL OF CATTLE DISEASES

Considering the vast size of the country the quantity of cattle veterinary aid at present available in rural areas is extremely inadequate and unsatisfactory. According to the Royal Commission there is only one qualified veterinary surgeon to about 1.5 million cattle and whatever veterinary aid there is, is supplied by the officer employed in the districts who has little knowledge of animal husbandry. For curing the diseased cattle the number of veterinary hospitals has to be increased manifold.

Government and the Cattle Problem

In order that the best results may be obtained, an all-India breeding policy has been drawn up by the I. C. A. R. and accepted by the Central and State Governments. This policy is briefly as under :—

(i) In the case of well-defined milch breeds the milking capacity should be developed to the maximum by selective breeding and the male progeny should be used for the development of non-descript cattle.

(ii) In case of well-defined draught breeds, the objective is to put as much milk in them as possible without materially impairing their quality for work.

Thus the breeding policy is generally designed to increase the production of milk without affecting the position in regard to the supply of bullocks. In every draught breed there is a small number which give more than an average quantity of milk. By selecting bulls from this group the milk production can then be progressively increased by further selection breeding.

For the implementation of this policy each State has been divided into zones according to the breeds used in them. Thus, in the districts of Ahmedabad, Kaira, Broach and Surat, the breed that will be used is 'Kankrej'. In the western districts of U. P. Aligarh, Mathura, Muzaffarnagar and Saharanpur, the breed to be used is 'Hariana'. In the hilly tracts,—Dehradun, Garhwal and parts of Niani Tal, Sindhi bulls will be used.

A number of schemes for the improvement of livestock formed part of the First and Second Five Year Plans. These include the 'Key Village Scheme,' the establishment of *Gosadans*, etc. The 'Key Village Scheme' provides for concentrated work, in a number of centres, each consisting of 3 or 4 villages. It envisages the castration of scrub bulls, breeding operations controlled by artificial insemination centres (each of which is intended to serve about 5,000 cows of breeding age), rearing of calves on a subsi-

dised basis. During the First Plan 600 Key Villages and 150 artificial insemination centres have been established. During the Second Plan 1258 Key Villages and 245 A. I. C. and 254 extension centres are to be set up. The programme is intended to produce about 22,000 improved stud bulls, 950,000 improved bullocks and a million improved cows.

The First Plan provided for the establishment of 160 *gosadans* to serve cattle population of 320,000. The scheme, however, did not make satisfactory progress. About 22 *gosadans* per 8,000 cattle has been established. During the Second Plan it is proposed to set up 60 *gosadans* for about 30,000 cattle; and to select 350 *goshalas* as centres to be developed for live-stock development. These *goshalas* will send their unserviceable and unproductive cattle to the nearest *gosadans*. Each *gosadans* will have facilities for the better utilisation of hides, bones and other products.

Under the First Plan a pilot scheme was undertaken to control renderpest, foot and mouth diseases, Haemorrhagic Septicemia, Black Quarter and Anthrax. During the plan the number of Veterinary dispensaries was increased from 2,000 to 2,650. In the Second Plan, 1900 more are to be added and these are to include 145 mobile dispensaries.

DAIRY INDUSTRY IN INDIA

Dairy farming in India is still in its infancy. It has not yet received the attention paid to it in the western countries like Denmark, Sweden, Norway, Newzealand, Australia and the U. S.A. The dairy industry in modern times began in India in 1881 when cream separators were first introduced. The first large-scale dairy farm was started by the military in 1891 at Allahabad, and the development of more dairy farms led to the creation of the post of Imperial Dairy Expert in 1920. The expert has helped to stimulate the use of modern methods of handling milk and factory methods in general and dairying practice particularly in the development of butter. The pasteurizing and bottling of milk has also been encouraged.

The poor milking quality of the local breeds of cattle, the inadequacy of the fodder supply, the absence of non-enforcement of laws to prevent the adulteration of milk and ghee, the absence of quick and reliable methods of detecting adulteration have all prevented the development of dairy farming in India.

With a view to develop the dairy industry Dr. Wright has suggested that attention should be concentrated on the production of indigenous milk products and not on products of the western origin. *Secondly*, steps should be taken to ensure that an adequate

supply of milk and milk products is available for consumption by the rural population; *thirdly*, any attempt to introduce improved methods should be effected by evolutionary changes of technique; *fourthly*, the combination of producers on a village industry basis should prove the most effective form of dairy organisation in India; *fifthly*, any improvement in production should be supplemented by provision of improved marketing facilities. Stricter control on the quality of milk and milk products on the part of the public health authorities are required.

Dairy Products

Estimates of milk production in India vary widely. Olver and Vaidyanathan estimated it at 1,000 million maunds.¹ Dr. Wright considered this estimate excessive and placed the figure at 800 million maunds. Report on Marketing of Milk (1950) gives the estimate as 583 million mds. While according to the government publication it is 520 million mds. of which 243 is cow-milk, 266 is buffalo-milk and 11 goat milk.

"In the value of milk production India stands next only to U. S. A. and her output is four times that of Great Britain, five times that of Denmark and six times that of Australia and seven times of Newzealand.² But in relation to the needs of her population, the production and consumption per head of population work out at 5.5 ozs. in 1951 as against 6.6 ozs. in 1931 and 5.8 ozs. in 1941 per day. According to the Planning Commission, the consumption varies considerably. It is as high as 16.89 ozs. in the Punjab and 15.72 ozs. in Rajasthan, while in Orissa it is 2.64 ozs. only.³ It is 56 ozs. in Newzealand; 45 ozs. in Australia; 43 ozs. in Norway; 40 ozs. 236 in U. K.; 35 ozs. in Canada; 33 ozs. in U. S. A.; 35 ozs. in Germany, Holland and Belgium; 30 ozs. in France; 29 ozs. in Switzerland as against only 6 ozs. in India.

In India with its tropical climate and vegetarian diet, "milk is frequently the only available source of first class protein while it has to support a considerable proportion of the mineral constituent and vitamins of the diet." Milk supplies exactly those elements which Indian dietaries lack and according to Dr. Wright the output of milk in India will have to be doubled to provide for even the minimum requirement, *viz.*, 15 ozs. per day. The seriousness of the plight of growing infants in our country who have to be fed on milk becomes patent when we learn that ill-nourished women of middle classes have often not got nearly enough milk to supply the needs of the growing infant.⁴

¹ *Assessment of the Annual Contribution of Livestock to Indian Economy* (1934).

² Wright, *Report on the Development of Cattle & Dairy Industry in India*, p. 1.

³ *First Five Year Plan*, p. 280.

⁴ *Health Bulletin*, Connor, p. 18.

The bulk of the milk supply of the country is produced in rural areas. It has been estimated that only 4 per cent of the milch cows and less than 61 per cent of milch buffaloes are kept in towns and cities.¹ But whole milk and ghee are in general little used in villages in the greater part of the country. Even in tracts where much larger quantities of milk are produced, 16 per cent of families do not consume any milk or milk products at all. Conditions in the other rural parts of India, where production is much less should be still worse as regards the production and consumption of milk and milk products.² Only the butter-milk or *lassi* which remains after the fat has been removed in the preparation of ghee is usually consumed in the villages.

Thus an appreciable increase in the supply of milk is an imperative necessity. According to the Planning Commission there should be an increase of about 30 to 40% in milk output over the period of 10 to 12 years. The average production of milk of better breed of Indian cows and buffaloes is about 1500 lbs. per lactation, but the general average is not more than 400 lbs, whereas the average production per cow in Netherlands is 8,000 lbs, in Australia 7,000 lbs., in Sweden 6,000 lbs. and in U. S. A. 5,000 lbs.

In order to encourage the breeding of high milk yielding animals, a scheme for the breeding of pedigree breeding stations will be operated in the Second Plan. This would demonstrate the farmer the benefit of using progeny tested sires for high milk production at a reduced cost. In order to supply adequate quantities of milk to the urban areas, the Second Plan proposes to organise 36 urban supply schemes, 12 co-operative creameries and 7 milk dairying plants.

In Bombay a large milk colony has been organised at Aarey and for Calcutta a similar colony is being established at Haringatta. Large-scale milk schemes are also proposed to be taken up in Delhi and Madras.

Ghee Industry

Ghee is generally made out of the buffalo butter which is heated for more than 8 to 10 hours so as to remove the moisture by evaporation. The ghee is under-boiled because in over-boiling it loses much of its weight. It is prepared by heating butter over a slow fire until an oil is formed that rises to the surface, while the refuse settles down.

¹ *Report on the Marketing of Milk in India*, p. 4.

² *Ibid*, p. 52.

In this method of production 10 to 15% of fat may be lost, viz., retained in the lassi used by the cultivator. The use of cream separator gives a great outturn of ghee per unit of milk but there are two difficulties. One is that the by-product is skim milk which the Indian cultivator does not like to use and the other is that the ghee produced in this way is inferior in quality.

Ghee-producing areas are U. P., Rajputana, Bengal, M. P., and Northern districts of Bihar and Madras. It is interesting to note that ghee is made in areas where extensive lands are available for pasturage and in the fringes of the forest where the pressure of population is not great. 3/5 of the ghee production is concentrated in Northern and Western India and the remaining two fifth is scattered in the rest of the country. Taking the country as whole, India produces 8.9 maunds of ghee per square mile, 21.4 maunds per village and 3.6 maunds for hundred persons. Of the total ghee production 30% is retained by the producers for annual consumption and 70 % is marketed. These percentage, have, however, slight variations.

India imports about 66,000 maunds of ghee mostly by land frontier routes from Nepal, but the trend of imports during the last few years has shown a downward tendency. India also exports some ghee mainly to Straits Settlement, Burma, Federated Malay States and to Africa.

To enable consumers to obtain supplies of pure ghee the Directorate of Marketing and Inspection inaugurated the 'Agmark Scheme' in 1937 which has progressed steadily. Some of the other main recommendations are as follows:—

1. The production and consumption of ghee should be accelerated by increasing milk production and by the introduction of improved methods of milk fat extraction under village conditions.
2. The units of sale should be standardised by a rigid enforcement of Weights and Measures Act.
3. A regular system controlling ghee markets should be introduced by the establishment of regulated market and cheap credit facilities should be provided to producers by organising co-operative ghee sale societies.
4. To ensure uniformity in the different States in the enforcement of food control, State Governments should promote Central legislation for the hygienic control of food production, distribution and sale. The above recommendations, if strictly adhered to, will, we hope, produce the desired consequences. State regulation of a commodity of such high nutritive value is highly desirable from considerations of public health and hygiene and its vast trade possibilities.

The Cattle Insurance Schemes in India*

The Government of India in 1948 deputed Mr. G. S. Priolkar Officer on Special Duty in the Ministry of Agriculture to study the problems of Cattle Insurance in India and thereby to submit the results of his researches. Consequently Mr. Priolkar prepared a detailed plan and submitted it to the Government in August, 1949 for due consideration. The main recommendations of his scheme are given below :—

In India Cattle Insurance will have to provide protection against losses due to contagious diseases.

The incidence of contagious diseases varies considerably between different classes of animals and between different areas. Areas in which the incidence is comparatively lighter may be selected for the operation of the pilot schemes.

In addition, provision may be made for regular and compulsory protection of all insured animals against rinderpest by the 'Serum Simultaneous' method in all cases, and against anthrax, haemorrhagic septicaemia and blackquarter at least in those tracts where these diseases are of most common occurrence. Protection may be provided by the Veterinary Departments concerned without any charge for inoculation serum, etc.

The existing field agencies of the provincial Veterinary Departments cannot be considered as adequate for providing necessary veterinary facilities in connection with a scheme of cattle insurance. Additional facilities will have to be provided in the areas of operation of the scheme.

A form of contract of cattle insurance, under which the benefit is payable not only on death of the animal during a prescribed period but also on its surviving that period, is described. This may prove more popular in India as compared with the usual form of term insurance contract and may be tried in selected areas according to local preferences.

In view of the objectives of a pilot scheme of cattle insurance, it will be advisable to spread the operations of the scheme to selected centres in different States instead of confining the operations to a single State.

Insurance may be offered in two types of centres. In rural centres insurance may be confined to working bullocks between specified age limits. In urban centres, comprising of cities and

*Adopted from *A Note on Problems of Cattle Insurance under Indian Conditions* pp. 142-144.

surrounding areas, insurance may be extended to milch animals also.

Six rural centres and six urban centres are suggested for the operation of the pilot scheme. The actual selection of the areas may be done in consultation with the State Governments concerned. It will be desirable to have 1000 to 2000 insured animals in each centre. A rural centre may comprise an area of approximately 300 sq. miles. An urban centre may include the city and area within a distance of 5 miles from the city.

A pilot scheme of cattle insurance could be operated through Co-operative Cattle Insurance Societies, with state-aid in various forms, or as a purely state-managed scheme. In view of the nature of considerations that must guide the choice, it may be advisable to obtain opinions of State Governments on this point. A suitable machinery for operation of the pilot scheme is outlined in respect of each form of organisation.

The following machinery is suggested for operating a pilot scheme administered through Cattle Insurance Societies :—

(a) Three Co-operative societies may operate in each rural centre, each with an area of operation of about 100 sq. miles. A single society may operate in an urban centre. There will thus be 18 rural societies and 6 urban societies.

(b) The societies may be given government help in the following forms during the pilot scheme stage :—

(i) An Establishment Grant may be given to each society at inception, which, together with the share capital of the society, will form the nucleus of reserve fund.

(ii) Veterinary help of all kinds may be provided free of cost to the insured by the Veterinary Departments concerned.

(iii) Government may reinsure half the risk in respect of each policy, on receiving half the premium from the society.

(iv) Government may also make annual grants for secretarial expenses.

(v) In addition to this, Government may guarantee interest-free loans to the societies during those year when the funds of the society are found inadequate to pay the claims.

(c) The administrative staff may comprise the following :—

(i) A full-time Cattle Insurance Officer in each State assisted by a clerk and peon ; he will be a veterinarian.

(ii) A manager or Cattle Insurance Officer in each State assisted by an accountant, two clerks, a stenographer and two peons. He may be guided by a Central Directing Committee.

The following machinery is suggested for operating a completely state managed pilot scheme :—

Each rural and urban centre may be placed in charge of a Cattle Insurance Officer who may be assisted by a clerk and a peon. The officer will be a veterinarian and will work in close co-operation with the Veterinary Department concerned.

Further each centre may be divided into three sub-centres, and a stock-supervisor who will form part of the normal field agencies of the State Veterinary Departments will be made available in each sub-centre to perform the field the field operations in connection with the Cattle Insurance Scheme. The stock supervisor will be paid a small honorarium for his services.

The work of selling insurance may be organised by appointing agents, who may be individuals or institutions like co-operative societies, or a commission basis.

Expert cattle-owners belonging to the respective areas may be associated with the work of valuation of animals and remunerated with an honorarium.

Death of insured animals may be required to be vouched and certified by persons of experience and standing in the respective areas. A panel of such persons may be formed in each area and small fee paid in respect of each certificate.

CHAPTER 11

AGRICULTURAL PRODUCTION

As India is essentially an agricultural country, it is necessary to examine the nature of agricultural production. The two important features of agricultural production in India are : (i) the variety of crops, and (ii) the preponderance of food over non-food crops. The food crops occupy about 80% of the total sown area. The following table shows the area under food and non-food crops since 1901-02 to 1954-55.¹

Area Under Food and Non-Food Crops in India

Year			Percentage		
	Under Food Crops (In million of acres)	Under Non-Food Crops	Total	Under Food Crops	Under Non-Food Crops
1901-92	188	57	245	85	15
1913-14	190	42	232	82	18
1927-28	192	45	247	81	19
1938-39	159	122	281	56	44
1940-41	198	50	248	80	20
1945-46	178	114	292	60	40
1946-47	182	117	299	55	45
1947-48	181	117	298	60	40
1949-50	248	53	301	83	17
1951-52	248	69	317	79	21
1954-55	270	60	330	77	13
1955-56	271	60	331	77	13

(Figures upto 1927-28 relate to Undivided India and those from 1938-39 onwards to Indian Union).

The increase in area under food-crops has been mainly due to various Grow More Food Crops Acts in the States since 1949.

¹ *Agricultural Statistics for Br. India* (1935-40) p. 2-3 ; C. N. Vakil, *Consequences of Divided India*, p. 178 ; *First Five Year Plan*, p. 162.

The following table gives an idea of crop-pattern in India¹ :—

Crops	1901-2		1940-41		1951-52	
	Acres (million)	% of Total Sown Area	Acres (millions)	% of Total Sown Area	Acres (millions)	% of Total Sown Area
Food Grains	177.00	80.0	187.1	75.8	234.1	74.76
Sugar	2.60	1.3	4.5	1.8	4.70	1.5
Condiments and Spices			1.5	0.6	2.4	0.8
Fruits and Vege- tables			3.9	1.6	5.00	5.58
Other Food Crops	8.03	3.7	1.2	0.5	1.56	0.52
Total Food Crops	187.63	85.0	198.48	80.0	247.8	79.3
Fibres	13.14	5.9				
Drugs and Narco- tics			19.2	7.7	22.3	7.0
Oil Seeds	11.97	5.4	2.1	0.9	1.6	0.5
Fodder Crops	2.94	1.4	16.7	6.7	32.0	11.1
Miscellaneous Non- Food Crops	29.78	13.6	10.4	4.2	11.1	3.6
Total Non-Food Crops	56.94	15.0	0.99	0.1	2.2	0.8
Total Areas Crop- ped	244.57	100.0	49.5	20.0	69.2	20.7
			247.98	100	317.0	100

(Figures for 1901-2 are inclusive of Burma ; those for 1940-41 are exclusive of Burma and those for 1951-52 relate to Indian Union.)

From this table it will be perfectly clear that the area under food-crops forms 79% of the total cropped area revealing the large extent of the resources utilised in the production of primary wants, while the non-food crops occupy only 21% of the cropped area. Among the food crops, the cereals account for 62%. These figure point to the fact that with an increase in population pressure, the area under food-crops has been larger than under the non-food crops.

The production of foodgrains and the principal non-food-grains was, at the start of the Five Year Plan period, insufficient for the requirements of the country. In the case of the food-grains alone, the deficit in 1950 at the then existing levels of population and consumption was estimated at about 3 million tons. Hence the increases in production were planned as food grains, 14% ; cotton 42% ; jute 63% ; oilseeds 8% and sugarcane 12%.

¹ *Agricultural Statistics of British India, 1938-40*, pp. 2-3 ; and *Indian Agricultural Statistics*, Vol. I, 1952, p. 34.

The following table shows the total annual production of food grains and the net increase or decrease over 1949-50¹ :—

Year	Total production of food grains	Additional production
1949-50	54.00	—
1951-52	52.30	—1.7
1952-53	58.40	4.4
1953-54	65.40	11.4
1954-55	65.80	11.8
1955-56	63.53	9.5

The output of foodgrains during 1954-55 exceeded the Plan target by about 42 lakh tons and increase was shared by all the major cereals except rice. The Index No. of agricultural production increased from 96 in 1950-51 to 103 in 1952-53. It further rose to 114 in 1953-54 and to 116.4 in 1954-55. In 1955-56 it receded to 113.7. Owing to large increase in the production of foodgrains there has been a great reduction in imports, resulting in considerable saving of foreign exchange, as would be clear from the following table :—

Year	Quantity imported (in million tons)	Value (in crores of rupees)	Saving (in crores of rupees)
1951	4.7	216	—
1952	3.9	210	6
1953	2.0	86	130
1954	0.8	68	148
1955	0.7	33	—

The Second Five Year Plan lays down the following target² of agricultural production :—

Commodity	Estimated production in 1955-56	Target of additional production	Estimated production by 1960-61	% Increase
Food-grains (M. tons)	65.0	15.5	80.5	24.6
Oilseed („)	5.5	2.1	7.6	37.0
Sugarcane („)	5.8	2.0	7.8	33.9
Cotton (m. bales)	4.2	2.3	6.5	55.6
Jute („)	4.0	1.5	5.5	58.1

The increase in food production to the extent of 55 million tons is expected to be realised broadly 2.4 millions tons from major irrigation; 1.8 M. tons from minor irrigation, 2.5 m. tons from increased use of manures and fertilisers, 1.0 m. tons from improved seeds, 0.8 m. tons from land reclamation and land development and 1.5 M. tons from increased use of improved

¹ Progress Report of the Five Year Plan for 1954-55,

² Second Five Year Plan, p. 256

techniques. The distribution of crops is expected to be some what as follows :—

Rice	4 to 5	m. tons
Wheat	1.5 to 2	,,
Other cereals	2.0 to 2.5	,,
Pulses	1.5 to 1.5	,,

At the end of the Plan, the level of consumption of food grains is expected to increase from 17.2 ozs. per adult at present to 18.3 ozs., and that of sugar from 1.4 oz. to 1.75 oz.

The following table gives the area and production of principal food-crops in India :—

Area and Production of Principal crops in India

Crop	Area (thousand acres)		Production (thousand acres)	
	1949-50	1955-56	1949-50	1955-56
Cereals :				
Rice	75,414	76,253	23,170	25,474
Jowar	38,335	42,721	5,777	6,940
Bajra	22,881	27,025	2,790	3,400
Maize	8,061	8,909	2,014	2,519
Ragi	5,450	5,627	1,520	1,844
Small Millets	13,382	13,799	2,242	2,103
Total Kharif cereals	163,523	173,630	37,513	42,280
Wheat	24,114	29,225	6,290	8,348
Barley	7,860	8,145	2,215	2,721
Total Rabi cereals	31,974	37,370	8,505	11,069
Total cereals	195,497	211,000	46,018	53,349
Pulses :				
Gram	20,497	22,902	3,667	4,845
Tur or Arhar	5,559	5,757	1,000	1,814
Other pulses	23,777	26,441	3,363	3,508
Total pulses	49,833	55,100	8,030	10,187
Total Foodgrains	245,330	266,100	54,048	63,536
Sugarcane	3,624	4,446	4,938*	5,859
Ginger (dry)	...	37	...	15
Pepper (black)	196	214	21	27
Chillies (dry)	1,269	1,492	289	340

* In terms of raw sugar gur.

Crop	Area (thousand acres)		Production (thousand acres)	
	1949-50	1955-56	1949-50	1955-56
Oilseeds :				
Groundnut	9,832	12,585	3,379 ¹	3,804 ¹
Castor seed	1,458	1,402	128	126
Sesamum	5,055	5,738	431	458
Total Kharif oilseeds	16,345	19,785	3,938	4,388
Rape and mustard	4,781	6,262	793	832
Linseed	3,759	3,424	411	376
Total Rabi oilseeds	8,540	9,686	1,204	1,208
Total oilseeds	24,855	29,473	5,142	5,596
Fibres :				
Cotton	12,173	20,230	2,628 ²	3,998 ²
Jute	1,163	1,581	3,089 ³	4,137 ³
Mesta	...	612	...	1,201 ³

We shall now discuss the production of various agricultural crops in India.

Food Crops

Important food crops grown in India are :—

Rice

Rice is the staple food of the Indian population and one of the important crops not only from the point of view of the acreage but also from that of the number of people it supports. At present it covers nearly 30 per cent of India's sown area.

It is the chief crop in Madras, Bihar, West Bengal, Uttar Pradesh, Madhya Pradesh; Orissa, Assam and Bombay. These areas account for 95% of the total acreage under rice. The total production of rice in India was 25,474 thousand tons in 1955-56 as against 18,863 thousand tons in 1948-49. The total acreage under rice was 76.2 million acres in 1955-56.

Rice thrives best in high temperature and abundant moisture and the crop is generally sown in fields susceptible to being flooded at certain stages of its growth. Hence, the greatest areas under rice are found in river deltas, in low-lying coastal districts and in tracts subject to floods during the monsoon. In Bengal there are

¹ In terms of nuts in shell.

² In thousand bales of 392 lbs. of cotton lint each.

³ In thousand bales of 400 lbs. each.

Note.—Figures for 1954-55 relate to Partially Revised Estimates while those for 1955-56 relate to Final Estimates.

three crops in the year, known as the *Aus* (autumn), *Aman* (winter) and *Bora* (summer) according to the season in which they are harvested. The winter crop is sown between June and August and harvested between November and January. The autumn crop is sown in March-July and harvested in September-October. The summer crop is sown between November and January and harvested in March-May. In Madhya Pradesh and Bundelkhand only one rice crop is cultivated. This is sown in May and June and harvested in September-October.

Rice is grown in three different ways, *viz.*, by broadcast, by drill and by transplantation from a seed bed. The first method is practised where labour is scarce and the soil infertile. The second method is mostly confined to peninsular India. The third method is common but it requires a plentiful supply of labour, because the seed beds are to be highly manured before the seeds are sown. At some places like Bengal and Bombay rice is grown on the rainfall only while in Madras and Western U. P. it is irrigated.

The yield per acre of rice is influenced by a number of factors, like rainfall, irrigation and soil, which are liable to vary from place to place. It also varies according to season. Summer rice generally gives the largest yield then autumn. The average yield is 862 lbs.¹ This figure does not compare favourably with those of Thailand's 900 to 950 lbs. per acre, for Japan it is 2,454 lbs., for U. S. A. 1,485 for Egypt 2,030, for Italy 2,940, for Spain 3,500 lbs.² In all these countries apart from the high fertility of the soil artificial manures are used in plenty, 60 to 80 lbs. of nitrogen, and 50 to 60 lbs. of phosphoric acid per acre, but in India the poverty of the peasants checks their use.

Almost in every district of West Bengal rice accounts for more than 60 per cent of the sown area. About 10.0 million acres of land are under rice cultivation in West Bengal with approximately 4.1 million tons of rice as annual yield. Other areas where rice crop covers over 80 per cent of the sown area are Cuttack, Puri and Sambalpur in Orissa, Kamrup and Goalpara in Assam, and West Godavari, Chingleput, Tanjore and Kanara in Madras.

The Imperial (Now Indian) Council of Agricultural Research has done invaluable work in improving the quality and yield of rice

1 The average outturn of rice per acre according to 1953-56 production was 914 lbs. in Bengal, 1,077 in Madras, 468 in Bihar and 508 in Orissa, 610 in U. P. 681 in M. P., and 879 in Assam. The yield per acre on irrigated farm is higher than that on the non-irrigated, *viz.*, 1694 lbs. per acre on irrigated land in Madras, 1200 in M. P., 1100 in U. P., as against only 1138 lbs. per acre on non-irrigated land in Madras, 500 in M. P., 850 in U. P.

2 *Rice Economics in Asia* (F. A. O. Publication of the United Nations).

in India and in protecting it against the ravage of pests. Research work in this direction is being carried on in different States, with research stations at Coimbatore (in Madras), Nagina (in U. P.), Chinsura and Bankura (in Bengal), at Habibganj (in Assam), Sabour (in Bihar), Raipur (in M. P.) and some other farms. In 1946, a Rice Research Institute was set up at Cuttack, where a scheme of hybridisation between Japonica and Indica rice is being worked out.

In spite of her normal production of 25 million tons, India is not self-sufficient in rice, and she has to import considerable quantities of paddy and rice. The bulk of imports are derived from Burma and the rest almost wholly from Indo-China and Thailand.

West Bengal has a normal deficit of 300,000 tons. Madras, Bihar, Bombay and U. P. have larger deficits but in these States wheat is the staple crop. Assam, M. P. and Orissa normally have surplus production.

There is a large scope for further cultivation of rice in India, particularly in West Bengal, Bihar and Orissa. The three multi-purpose projects in the Damodar, Kosi and Mahanadi aim at making million acres of land cultivated. Production of rice can be increased in the Indian Union by 50 per cent by intensive cultivation and improved varieties and better manuring. During the last two years a notable development has been made in the initiation of Japanese method of paddy cultivation, which involves the addition of adequate organic manures, application of fertilisers at proper time and the use of intensive labour. The results have been encouraging, the per acre yield of paddy by Japanese cultivation ranging before 3,500 lb. and 8,000 lb. In 1955-56 the new method was applied on about 21 lakh acres as against only 6 lakh acres 1952-53.

Wheat

Unlike rice wheat is the staple crop in the Punjab and Uttar Pradesh. India occupies sixth place in the list of wheat-producing countries and produces about one-eighth of the world's total.

It requires a large amount of heat for its grain to ripen. At the sowing time it requires water but too heavy rain like that of West Bengal, Assam and Eastern Madras is unfavourable to cultivation. The deficiency of rainfall is compensated by providing irrigation to the crop such as in East Punjab and U. P. in India. There are two principal varieties of wheat, the Marconi wheat and the normal bread wheat. The first type is grown as a rainfed crop on the clayey soils of Bombay, M. P. and Andhra while the second type grows as an irrigated crop in the Punjab.

In the Punjab and the Western U. P., the bulk of the crop is generally sown by the end of November and harvested by the end of April. In U. P. and Bihar it is generally grown in late October or early November, and is harvested in March. While in the Deccan and parts of Bombay and Rajasthan it is sown between September and the middle of October and harvested by the beginning of April.

In U. P. wheat is cultivated more or less throughout the State and the rich producing districts are Dehradun, Saharanpur, Muzaffarnagar, Meerut, Moradabad, Etawah. Shahjahanpur, Budaun and Nainital, where more than 30 per cent of the area is under wheat. The basin of Narbada in M. P. is also a rich wheat region. Although the monsoon discourages the wheat cultivation in West Bengal, about 98,000 acres are under wheat in Murshidabad and parts of Nadia.

In 1947-48 the wheat acreage was 20.2 million acres and production 5.4 tons but it increased to 29.2 million acres and 8.3 million tons in 1955-56.

Compared with other countries, India's position is indeed very unsatisfactory. The average yield of wheat per acre in India is 640 lbs. as compared with 975 lbs. in Canada, 850 lbs. in U. S. A., 710 in Australia, 780 in Argentina, 1,150 in Europe and 650 in Russia. In India the yield is abnormally poor because the other producing countries use farm machinery, grain elevators, better seeds, etc., which help to increase enormously their outturn per acre. Indian cultivators are poor, conservative and illiterate and, therefore, cannot improve their methods of cultivation.¹

In 1953 the actual value of wheat and wheat flour imports into India was 153 crores of rupees. According to the International Wheat Agreement India secured an acceptance of her guaranteed purchase of 1 million tons per year for four years, 45 per cent of the Indian wheat is consumed in the villages of production and the remaining 55% is put on the open market.

Millets

Millets include a number of food crops in India. Of these millets the most important is Jowar or Cholum and Bajra or

¹ The average yield of wheat per acre varied in different States in 1955-56 as 758 lbs. in U. P., 509 lbs. in M. P., 639 in Bihar, 326 in Bombay, 872 in Rajasthan; 831 in the Punjab, and 975 in PEPSU. Like rice, the yield of wheat also varies with irrigational facilities, e.g., it is 967 lbs. per acre on the irrigated land in Punjab, 1200 lbs. in U. P., and 1250 lbs. in Bombay as against 572 lbs. on unirrigated land in Punjab, 800 lbs. in U. P. and 510 lbs. in Bombay.

Cumbu. The millet is the staple crop of the agricultural population of Madras, Bombay and the adjoining districts of Andhra. It flourishes best in hot lands which are fairly dry. It can be grown in areas without sufficient rainfall and irrigation and where soil is rather infertile owing to the rocky or sandy character, millets are grown as a Kharif crop but more usually as a catch crop.

The climatic conditions for their cultivation is such that they are grown in places having less than 40" of rainfall and they thrive quite well on sandy loams or well-drained light soils. But their soil requirements are quite flexible and they thrive on all types of soils.

Jowar is extensively cultivated in the Deccan and also to some extent in the other dry parts of India. The area under cultivation was 42,721 thousand acres and the yield was 6,940 thousand tons in 1955-56. More than 50 per cent of the acreage is confined to Bombay, Madras, Madhya Pradesh, Andhra. Other important producers are the Punjab, Andhra and Rajasthan. It is used both as food and fodder in India.

Bajra is a short-season crop and is grown generally on poor soils. It is less widely cultivated and is essentially village food crop. Bombay, Madras, East Punjab, Hyderabad, and Rajasthan are the principal producers. The area under cultivation was 27,350 thousand acres and the yield in the same year amounted to 3,400 thousand tons. More than 50 per cent of the acreage under bajra is confined to Bombay, Madras, U. P., and the Punjab.

Pulses include foodgrains like gram, arhar, lentils or masur. These grains are raised in different parts of India and consumed mostly in the areas of production. These grains are valuable both from the point of nutrition and husbandry. The pulses help to balance the diet, as they supply the protein which is lacking in rice. They also fertilise the land and supply the organic matter which the soil requires. They form an important rotation crop as they absorb nitrogen from the air and contribute to the restoration of what the soil may lose through other crops. The cultivation of pulses requires less rainfall than the grains, and both the seeds and the stems constitute good cattle fodder.

Gram is the most important pulses and is grown extensively in U. P. Other producing areas are Bihar, East Punjab, Madhya Pradesh, Bombay, Hyderabad and Mysore. The average annual output in 1955-56 was 4,865 thousand tons and the acreage under gram was 22,902 thousand acres. The percentage of acreage is greater in southern Uttar Pradesh (between Agra and Mirzapur),

north-east Punjab, Central Bihar, South Mysore and in north-east Madhya Pradesh. Local consumption of gram is great and hence the exports of gram are never considerable.¹

The *Lentil* or *Arhar* is grown particularly in Madhya Pradesh, though in other States its cultivation is not uncommon. *Arhar* is one of the most important food-stuffs of the countryside and is generally grown as a mixed crop, particularly in rotation with cereals. The annual production of these two crops is very considerable. In normal times the exports of these pulses are made to U. K., Ceylon, Mauritius, Burma and France.

Barley

Barley resembles wheat in general appearance and manner of growth. This can thrive on scanty moisture supply. (Light and sandy soils are best suited for barley.) It can be cultivated even on alkaline soils. It is a winter crop and is sown in October and November. The harvesting season begins in March and is completed by the middle of April. The total acreage under barley in 1955-56 was 8,145 thousand acres and the total output was 2,721 thousand tons. India raises only about 5 per cent of the world's total barley.

It is mainly grown in Northern India and U. P. has the largest acreage, where about 10 per cent of the total cropped area is under it. Its cultivation is very extensive in the Ganga basin of U. P. particularly in the districts of Banaras, Jaunpur, Gazipur, Gorakhpur, Allahabad, Ballia, Partabgarh, Azamgarh, and in Garhwal. Its cultivation also covers a large percentage of total sown area in Saran, Champaran, and Muzaffarpur in Bihar. Thus the two zones of barley production are north-western districts of Bihar and the adjoining districts of U. P. and the south-eastern districts of East Punjab and the adjacent districts of U. P.

The yield per acre in India is only 802 lbs. as against 2656 lbs. in Denmark, 1932 lbs. in Germany, 1867 lbs. in U. K., 1916 lbs. in Japan, 1044 lbs. in China, 1027 lbs. in U. S. A., 771 lbs. in U.S.S.R., and 938 lbs. in Canada.² The low outturn of the Indian crop is capable of being improved to a considerable extent by breeding varieties suited to the different climatic and cultural conditions, existing in the barley tracts of the country by a properly organised distribution of improved seed.

1 The average yield per acre varies from State to State e.g., it is 360 lbs. per acre in Bombay, 401 in M. P., 784 lbs. in Bihar and 622 lbs. in U. P.

2 The yield per acre in the State varies from 846 lbs. in U. P. to 762 lbs. in Bihar 602 lbs. in East Punjab.

The internal demand for barley is so high that exportable surplus cannot attain considerable dimensions. Hence, we export only 1/2% of the total world exports of barley.

Maize

It is one of the most easily grown crops for in India it is characterised by inter-culture according to which practice it is grown intermixed with the pulses and the oilseeds. It is grown more or less all over India, but Northern India raises the major portion. It requires frequent high temperature and much more summer rain than wheat, at regular intervals. It prefers fertile soil. A moderately sandy loam, wet but well-drained is the most suitable one for its growth. The ideal climate for its growth is one with a summer $4\frac{1}{2}$ to 6 months, long without frost, the middle portion hot both day night, sunny skies, sufficient rain to supply the demand of a rapidly growing and luxuriant crop, falling at such intervals as best to provide sufficient moisture without ever making the soil actually wet.

Uttar Pradesh, Bihar and the Punjab are the leading producers. The cultivation is practised throughout U. P. and Bihar though Upper Ganga valley has a larger acreage. North-eastern Punjab and the south-western Kashmir are also rich producing areas. In 1955-56 the acreage under main was 8,909 thousand acres and the yield was 2,519 thousand tons. Maize is produced mainly home consumption and, hence, the exports are mainly very inconsiderable. It is mainly consumed by men and cattle both.

The yield of maize is very small as compared to other countries, India produce 803 lbs. per acre as against 2,828 lbs. in Germany, 2,079 lbs. in Italy, 1,891 lbs. in Egypt, 1,579 lbs. in U. S. A., 1,392 lbs. in Japan and 1,284 lbs. in China.

Commercial Crops

As stated above the food crops cover 79 per cent of the total cultivated area and the rest is covered by various commercial crops in India. The following table gives the acreage and production of principal non-food crops¹ :—

Non-Food Crops	1936-37	1947-48	1950-51	1954-55
	to 1938-39			
Cotton	20,969	11,671	14,536	18,346
Jute	862	652	1,411	1,273
Groundnuts	8,022	10,267	11,106	12,647
Other oilseeds	13,321	12,652	15,402	16,688
Sugarcane	3,276	3,528	4,217	3,932
Tobacco	902	845	883	860
Tea	764	766	777	755

¹ India, 1955, pp. 165-66 for 1955-56 figures see ante 210.

Non-Food Crops	1936-37 to 1938-39	1947-48	1950-51	1954-55
Coffee	185	212	224	230
Rubber	127	159	144	169
Production in (000 tons)				
Cotton	4,146	2,168	2,910	4,298
Jute	1,904	1,658	3,283	3,153
Groundnuts	3,145	3,599	3,426	3,823
Other oilseeds	1,667	1,560	1,652	2,054
Sugarcane	4,455	4,913	6,066	5,546
Tobacco	338	270	206	248
Tea (000 lbs.)	3,92,354	5,62,000	6,07,318	5,88,733
Coffee („)	35,890	41,000	54,322	59,784
Rubber („)	31,274	37,000	31,829	44,700

Cotton

India is the second largest cotton-producing country in the world, preceded by the U.S.A. only. In spite of the fact that she occupies the second place, her share in the world production is less than one-fifth. Besides, the quality of the Indian cotton is inferior. Indian cotton is of short-staple and is good for coarse fabrics only. Cotton has a considerable climatic range. It grows in dry regions of Bombay as well as in the moist province of Bengal. Generally speaking it is a dry region crop and flourishes where the rainfall is less than 40". The soil is equally important. The sticky black soil of the Deccan is ideal for cotton cultivation. "Adequate rainfall in summer, large sunshine and continuously warm weather are the chief requirements of the plant to flower and fruit richly. After fruiting the weather must be sunny, free from rains so that the cotton in bolls is picked up quickly and easily without being spoiled. Cloudy and heavy rainy regions are unsuited to its cultivation."

Cotton is cultivated in Bombay, Madhya Pradesh, Berar, Madras, U. P., Andhra Rajasthan and Mysore. Half the area is confined to Bombay and M. P. There are two varieties of cotton in India, the short staple or the Indian cotton and the long staple or the American cotton.² The bulk of the cotton comes in the shape of the Indian cotton. The area of

1 In India, cotton is considered *long staple* when the fibre is one inch is long. When the fibre is less than 17¹/₃₂" it known as *short staple*. The chief varieties of India cotton are : (1) *Broach, Khundesh, Kumasa, Dharwar* and *Sind* in Bombay. (2) *Oomras* in M. P. and Berar, (3) *Coconada, Hambodia, Karungauni* and *Tinnevelly* in Madras, (4) *Bengals* in U.P. and *Comilla* in Bengal.

2 *India*, 1955, p. 165-66.

short staple are M. P., Berar, Khandesh, Rajasthan and U. P. while that of the long staple cotton are Gujarat, parts of Saurashtra Southern Bombay and large portions of Madras.

The following table gives the acreage and production of cotton in India :—

The following table gives the area and yield of cotton in India since 1948-49 :—

Year	Area under cotton (000 acres)	Yield in 000 bales of 392 lbs.	Average yield per acre in lb. of lint
1948—49	11,293	2,300	80
1949—50	12,173	2,971	96
1950—51	13,859	3,300	94
1951—52	13,213	3,807	92
1952—53	15,693	3,657	91
1953—54	17,027	4,600	106
1954—55	18,346	4,298	77
1955—56	20,230	3,998	84

By the operation of various Food Crops Acts, the area under cotton crop was reduced from time to time with the twin object of growing more food and of preventing loss to the cotton grower because of the loss of the Japanese market. The cumulative effect of the legislative measure was a steep decline in the acreage under cotton. The reduction was carried out mainly in the areas which used to grow the short staple cotton. The main areas in which the reduction occurred were Bombay (2.5 million acres), M. P. and Berar (9 m. acres) Madras (8 m. acres), Andhra (1.1 m. acres) and Bombay states (1.3 acres).

With the partition of the country the long staple areas of the West Punjab and Sind went to Pakistan and hence the country felt the acute shortage of long staple cotton for her mills. To meet this difficulty, the Indian Central Cotton Committee recommended an overall increase in the area of cotton by 40 lakh acres, viz., from 115 lakh acres in 1946-47 to a target of 155 lakh acres.

Before the inauguration of the First Five Year Plan, the production of cotton in India was 29.7 lakh bales. The target of an additional 12.6 lakh bales and an acreage increase of 3.5 million, laid down in the Plan, was exceeded in 1954-55 when production reached 42.98 lakh bales. Irrigation, use of improved seeds, use of manures, fertilizers, and control of pests and diseases have been sought to be the main measures calculated to increase yield.¹

¹ K. Sawhney, *Cotton Resources of India, in Indian Cotton Textile Industry, Centenary Volume*, 1951, p. 69.

Today India's self-sufficiency is only in respect of staples under 1". Annual imports of cotton of over 1-1/16" staple from countries like Egypt, America and East Africa are estimated at 7 lakh bales, costing around Rs. 50 crores.¹ It is interesting to note that in complete contrast to the twenties, when under 25% of the crop consisted of medium and long staples (over 11/16"), today about 75% is medium and long staple cotton. Even during the last 7 years, production of long-staples has risen from 15% to 35% of the total crop. The credit for this goes to I.C.C.C., which has since its inception in 1922, financed over 120 research schemes and produced no less than 55 improved varieties of cotton, which today cover almost 2/3rds of India's tremendous cotton acreage and supply 70% of the cotton consumed by the Indian textile industry.

Production of Cotton according to Staple

(In 000 bales of 392 lbs. each)

Staple	1946-47	1947-48	1948-49	1949-50	1950-51	1951-52	1952-53	1953-54
Long staple (7/8" & above)	405	319	322	510	684	919	900	1,365
Medium staple (below 7/16")	1,008	1,124	889	1,332	1,442	1,223	1,366	1,623
Short staple (11/16" & above)	755	745	556	746	839	992	865	947
Total	2,168	2,188	1,767	2,628	2,971	3,133	3,131	3,935

During 1954-55, the production of these three types of cotton was respectively 1,584; 1,886 and 325 thousand bales-totalling 4,293 thousand bales.

In order to meet the increasing demand for cotton supplies because of increase in per capita consumption of cloth from 11.77 to 18 yds. by 1960, and the exports of about 1,000 to 1,200 million yds. annually, the textile production would have to be in the vicinity of 9,200 to 9,400 million yds. annually, which would require a crop of about 60 lakh bales. This estimate is based on imports of superior qualities of about 5 lakhs, short staple exports of around 3 to 4 lakhs and extra factory consumption of about 3 lakh bales. This increase in production is expected to be met by bringing extra acreage under cotton production with the completion of new irrigation projects like the Bhakra-Nangal in the Punjab and the Tungbhadra in Andhra. Efforts are also now being made to increase the production of long staple Egyptian Cotton in Mysore, long staple American Cotton in Madras and E. Punjab and extra long staple in West Madras.² Efforts have also

¹ R. G. Sanyal, *India's Cotton Supplies*, in *Major Industries Annual*, 1954-55, p. 141.

² R. Owen, *Overseas Economic Survey—India*, 1952, p. 199.

been made to breed from foreign seeds, such as the Combodia-Madras, Uganda seed cottons grown in Madras, and Bombay, and the Mysore-American grown in Mysore State.

Though India stands second in the production of cotton in the world, yet her yield per acre is very small. In India the yield is 77 lbs. per acre as against 269 lbs. in U. S. A., 231 in Argentina, 271 in U. S. S. R., 149 in Pakistan, 392 in Egypt, 231 in Anglo-Egyptian Sudan, 86 in Uganda and 454 lbs. in Peru.

Jute

It is the most important fibre of India and is an object of world commerce. The cultivation of jute is restricted to the Ganga, Brahmaputra delta in Bengal and Assam, and Bihar and Orissa, where the soil is enriched by alluvial deposits brought by river inundation favouring the growth of this exhausting crop without any expenditure on manure. Its cultivation requires a hot damp climate in which there is not much rain in the early part of the season. It grows best on a loamy soil or rich clay and sand, although the bulk of the total quantity of jute grown in Bengal is cultivated on Chara and sand banks and islands formed by rivers. It is grown from March to May and the harvesting begins in July and extends up to September. In West Bengal sowing is done in April and May and harvesting time is mid-August to September. In Bihar and Assam time of sowing is March to April while in Orissa it is May-June.

In Bihar 90 per cent of the jute cultivation is concentrated in the districts of Purnea, in Orissa more than 92 per cent of jute is raised in the Cuttack district, and in Assam jute is raised throughout the Brahmaputra valley.

The partition has seriously dislocated the monopolistic position of undivided India in jute trade and industry. Because of the partition India has become the importer of raw jute for about 75% of the jute acreage went to Pakistan, whereas the entire jute industry remained in India.

The share of West Bengal in the total production of jute in India varies between 35 to 50 per cent. The average yield of jute per acre in Bihar is 1149 lbs. per acre, followed by Assam 1056 lbs., Cooch-Bihar 1070 lbs., West Bengal 1155 lbs., Tripura 969 lbs., and Orissa 875 lbs. The yield per acre is higher in Pakistan than in India. Whereas the yield per acre of jute in India varies between 2.2 and 2.6 bales per acre, that in Pakistan is normally more than 3 bales per acre and in some well-developed districts there have been occasions when it has gone up to nearly 4 bales per acre.

Indian Union's deficit in jute supply is about 6 million bales. According to the Jute Agricultural Research Department about

West Bengal 100,000, Bihar 50,000, Orissa 50,000, Assam 50,000, Travancore 50,000, Madras 20,000, Cooch-Bihar 5,000 and Tripura 5,000 acres respectively.

Active steps are also being taken to grow jute in Uttar Pradesh so that her three mills may be self-supporting. Already 15,000 acres are under jute cultivation in U. P. in the submontane region along the foot of the Himalayas which are fed by the rivers Sarju, Gogra, Sarda and Chawka and remain water-logged for at least nine months of the year. The A. R. Institute has introduced a new system of cultivation, as a result of which not only has the cost of cultivation been lowered, but the yield and quality improved considerably.

The country's jute production in 1950-51 was 33 lakh bales. A target of 53.9 lakh bales was set in the First Plan. The output in the first 2 years reached 46 to 47 lakh bales but declined to 31.32 lakh bales in two subsequent years owing to the steep fall in the price of raw jute. In the Second Plan it is proposed to increase the jute production by 58% over 1955-56 figures (i.e., an additional production of 1.5 million bales). The following table shows the area and yield of jute in India since 1936-39 :—

Area and Production of Jute

Year	Area under Jute (000 acres)	Production (000 bales of 400 lbs.)
1936-39	20,969	4,146
1947-48	651	1,696
1948-49	834	2,055
194-950	1,163	3,089
1950-51	1,454	3,301
1951-52	1,951	4,678
1952-53	1,817	4,605
1953-54	1,196	3,129
1954-55	1,273	3,153
1955-56	1,581	4,137

Oilseeds

India produces 23 lakh tonnes (total production)

India is one of the leading oilseed producing countries of the world. She raises all the principal oilseeds for world trade. Her share in the world production is 61.5%, in groundnut 26.8%, in Sesamum 21.8%, in Castor 15.1%, in Rapeseed and 15.1% in Linseed. She has 29.4 million acres under oilseeds and she produces 5.5 million tons annually. The available seeds are utilised within the country for seed purposes, for animal food and partly for meeting the vegetable oil requirements of the producing firms.

tons of oilcakes. However, with the strict regulation of exports introduced by the Government, the exports of oilseeds has definitely declined. The exact estimates of the quantities utilised internally for various domestic purposes are not available. The Marketing Surveys conducted by the Central Government have disclosed that the quantity available from production for crushing in the country was 76 % for the groundnut, 78% for sesamum and 89% for rape and mustard.

The following table shows the area and production of oilseeds, in India :—

Year	Area (million acres)	Production (million tons)
1936—37 to 1938—39	21·34	4·81
1950-51	26·5	5·08
1951-52	28·87	4·93
1952-53	27·66	4·63
1953-54	27·60	5·59
1954-55	29·33	5·87
1955-56	29·47	5·59

Groundnut

It is also known as pea-nut, earth-nut and monkey-nut. Plant requires a sandy loam, light and porous with plenty of lime, with free sub-soil drainage and a liberal supply of water. The crop thrives best on well-drained open soils when the rainfall is well distributed. It cannot stand frost and can withstand high temperature, provided there is enough moisture at the root. It is a kharif crop. Its sowings begin under the hot weather of April and May and harvests come in between November and January. The yield per acre depends to a certain extent on the variety grown in a particular area, but more important are the vicissitudes of season and the differences in the technique of cultivation. In general the spreading varieties give a larger yield than the bunch types and yield on light soils is better than on the heavy ones. Also the irrigated land gives double the yield of rain-fed lands, *i. e.*, the yield of monsoon crop is 1,000 lbs. per acre and the irrigated crop is 2,400 lbs. per acre. The average yield per acre in India, 902 lbs., is among the lowest among the world, though better than Senegal, 765 lbs., South Africa, 491 lbs. and U. S. A. 752 lbs. Spain and Italy yield nearly twice the yield as India and even China records 1668 lbs. Mauritius stands foremost with 2230 lbs.

India produced 3·8 million tons of groundnuts on 12·5 million acres in 1955-56. It is largely grown in Madras, Bombay, Andhra, U. P. and M. P. But practically the whole of the crop is grown in the peninsular India and with the exception of U. P.

Madras is the dominant producer in India and accounts for 56 per cent of the Indian production while her rival Bombay and Andhra contribute only 17 per cent respectively.

The greater part of the production has an internal market and roughly a quarter of our annual production is exported. Normally the principal buyers of the Indian groundnut are France, Belgium, Germany, Austria, Hungary, Italy, and the U. K.

Linseed

India is the second largest producer in the world of linseed. In India it is cultivated for its seeds only. The plant requires the same kind of climate as wheat and is grown as soon as the monsoon is over. The harvesting begins in February, though in Madras a summer variety is also grown. The largest acreage is to be found in the Madhya Pradesh. Other important States are Bihar, Orissa, Uttar Pradesh, Bombay and West Bengal, Andhra South-east Rajasthan and the Punjab.

The crop is sown either pure or mixed and the fair average may be taken at 435 lbs. to the acre. The State yields are 428 lbs. in Bengal, 420 lbs. in U. P., 294 lbs. in Bihar and Orissa, and 196 lbs in M. P. In India two varieties are grown, yellow and brown. Practically all the produce is exported to the U. K., France, Belgium, Italy and Holland.

Sesame

It is an important crop ranking with the groundnut, in the area over which it is grown. It is an annual thriving in the sub-tropical and tropical parts of the world. It is grown, on light and sandy soils, though some of the varieties do well on the black cotton lands. It is for this reason that its cultivation is more important in the Deccan than in the Indo-Gangetic valley. Its cultivation extends to all the States of India but the crop is raised most extensively in Bombay, U. P., Madras, and M. P. India produces about one-fourth of the world's total. During recent years the export of the sesame has been on the decline on account of the development of the vegetable oil industry in the country itself. The normal buyers of the sesame are U. K., France, Italy, Belgium and Germany.

Rape and Mustard

Rape (known as *Sarson*) and Mustard (known as *Rye*) are the rabi crops being sown from August to October and harvested from January to April. The crops are grown either mixed almost

entirely on unirrigated lands. The normal yield per acre varies in different States in India. It is 459 lbs. in Assam, 624 lbs. in Bengal, 491 lbs. in Bihar and Orissa, 625 lbs. in M. P., 320 lbs. in Bombay, 325 lbs. in Delhi, and 600 lbs. per acre in U. P. The important producers are Uttar Pradesh, West Bengal, Bihar and Orissa, East Punjab.

Castorseed

India holds a virtual monopoly of castorseed production in the world, although small quantities are also grown in Java, Indo-China, Manchuria and Brazil. The plant grows from May to July and is harvested in January and February, a late variety is also sown (which is generally sown in September and harvested in March and April). A fair amount of moisture and rainfall after sowing is essential to ensure good germination, but after the root system has developed, less moisture is needed. It does well on the soils where maize is cultivated.

Though it is largely grown throughout India yet it is chiefly cultivated in Madras, Andhra, Bombay and Madhya Pradesh. A large quantity is exported to U. K., France, U. S. A., Italy, Germany and Spain in the normal times.

Tobacco

India is the second largest tobacco-producing country in the world and contributes about 35 per cent of the world's total. India together with U. S. A., and China accounts for 60 per cent of the world's tobacco-growing areas, which is of the order of 7.2 million acres.

Tobacco cultivation is geographically confined to two main zones. The Eastern Zone comprising of Behar, U. P. and West Bengal and the Southern Zone which comprises of Madras, Mysore and Bombay. The districts of Muzzaifarpur, Darbhanga, Monghyr, and Purnea produce 90 per cent of Bihar tobacco. In 1953 the Eastern Zone contributed about 68,000 tons on 1,00,000 acres. In West Bengal, the tracts are Jalpaiguri and Cooch-Bihar, and some quantity is also raised in Hooghly. In Madras, Andhra the important tobacco-producing areas are Guntur, Vishakhapatnam, East Godavari, Coimbatore and Madurai. Two-thirds of the total acreage of Andhra are confined to Guntur. In Bombay, the tobacco-growing tracts are Belgaum, Satara, Baroda and Kaira. Outside these two zones tobacco is also grown in the Punjab, particularly in the districts of Jullundur, Hoshiarpur and Gurdaspur and also in the Bidar district of Andhra. The yield per acre varies greatly due to soil and climatic conditions of the producing regions. It varies from 960 lbs. per acre in Madras to 658 in Andhra, 320 in Mysore, 534 in Bombay, 666 in Bihar, 695 in U. P. and 728 in Bengal.

The bulk of the tobacco grown in India is consumed in the local area, and the exportable surplus is never considerable. The principal destinations of tobacco are U. K., Aden and Japan, U. S. S. R., Sweden, Netherlands, Ceylon, Kenya.

Sugarcane

India is the largest cane-producing country in the world. In 1955-56 the area under sugarcane was 4,446 thousand acres and production 5,859,000 tons. Although sugarcane is cultivated throughout India, the most important sugarcane tracts are in U. P., Bihar and West Bengal, East Punjab and Bombay. Uttar Pradesh produces more than 50 per cent of India's total output. The plant is cultivated throughout the State and the higher acreage is devoted to it in Saharanpur, Shahjahanpur, Fyzabad, Gorakhpur, Azamgarh, Ballia, Jaunpur, Banaras and Bulandshahar. In Bihar the important districts are Champaran, Saran, Darbhanga, and Muzaffarpur. East Punjab which is the third largest cane-producing State in India with a produce less than one-tenth that of U. P. cultivates the plant extensively in Amritsar, Jullundur and Rohtak. West Bengal also produces large quantity of sugarcane but the quality is poor. The producing districts are Birbhum, Burdwan and Nadia. Sugarcane is also grown in Andhra, Mysore and Madras.

The yield per acre of sugarcane is lower in India than in other countries.¹ It is only 13.5 tons per acre in India but in Cuba it is 17 tons, in Java 56, in Brazil 16, in Australia 21 and in Hawaii 62 in Port Rico 24 and in Mauritius 20. This weakness is due to unscientific cultivation, small and scattered nature of the holdings, and the impossibility in most cases to concentrate cultivation round a central factory, extensive methods of cultivation, lack of adequate manurial fertilisers.

Recently improved varieties of sugarcane like Co. 410,419, 431,213,290,312,205,213,331,332 are being raised in different States. The improvement of the sugarcane cultivation and the study of the pests and diseases are being carried on by the Indian Central Sugarcane Committee.

Tea

India is the largest tea-producing country in the world. The region of tea cultivation is a wide one. Beginning with the Himalayan plantations in the Punjab (33°N) it extends to the Peninsular India (between 10° and 23°N). The total area under tea in the Indian Union was 7,55,000 acres and the production was 588 m. lbs. in 1953-54. Of the total area

¹ In India it varies from 1,726 lbs. per acre in Bihar to 2,430 in U. P., 2,760 in Punjab, and 4,737 in West Bengal and 5,571 in Mysore 6,151 in Madras, 6,538 in Andhra and 5,702 in Bombay.

under tea in India 50 per cent occurs in Assam and over 20 per cent in the West Bengal. In fact, nearly 70 per cent of India's total area under tea lies in Assam and two contiguous districts of Jalpaiguri and Darjeeling in West Bengal. South India accounts for 17 per cent of the total acreage, while about 13 per cent lie in the minor tea-producing areas in Uttar Pradesh and Bihar and East Punjab.

In Assam, tea is grown in the districts of Lakhimpur, Sibsagar, Darrang and Cachhar. In West Bengal, the two districts of Darjeeling and Jalpaiguri produce almost the entire output of the State. Tripura State also raises a small quantity. Tea is also grown in Purnea, Ranchi and Hazaribagh in Bihar; Garhwal and Almora in U. P., and Kangra in East Punjab. In Southern India, the major portion of the output is raised by Travancore, Madras, Coorg, Mysore and Bombay.

Tea plant requires a deep fertile soil, well drained, and hence is generally grown on hill-sides. It also requires a high temperature; cheap labour is necessary for picking tea leaves.

India is the largest tea exporting country in the world, supplying as she does about 50% of the world's trade in tea. We export about 76% of our total production—especially to U. K. France, Canada, the U. S. A., Australia and Newzealand. In 1954-55, we exported tea worth 14,653 lakhs of rupees to these countries.

From 1933 to 1952, the export of Indian tea used to be regulated according to the terms of the International Tea Market Expansion Board. In 1952, the Government of India discontinued its membership of the Board. India is now trying to popularise its tea in U. S. A. and other countries.

Coffee

Coffee is a subtropical crop, whose area in India is almost entirely confined to the districts north of the Nilgiris at elevations over 3,000 feet where the dry season is well marked. It requires deep red soil formed of withered volcanic rocks mixed with humus; and heavy rainfall. The acreage under coffee in India is only about 2 per cent of the world's area. India's share in the world's production of coffee is less than 1 per cent. Quantitatively India's position in the world trade is thus of minor importance though qualitatively she holds her own with the world's best coffee. All coffee plantations are generally confined to South India. Of the total area under coffee Mysore has about 37%, Madras 36%, Coorg 20%, Travancore 6% and Cochin 1%. Nearly 2,32,000 acres of land are under coffee plantations and the yield was 55,610,000

million lbs. in 1953-54. Seventy-five per cent of coffee acreage is Indian-owned and 25 per cent is European-owned.

Southern India has nearly 7,000 coffee plantations. Mysore alone raises large quantities. In Mysore the plantations are mostly confined to the south and west, particularly in the districts of Kadir, Shimoga and Hassan and Mysore. In Madras coffee plantations are found mostly in the south-west from North Arcot to Tinnevely including western areas. The Nilgiri is the most important productive area of Madras. Some plantations are also found in Vishakhapatnam in the north-east. Some quantity is also raised in the Satara district of Bombay.

The Indian coffee crop gives a total of about 55 million lbs. the yield per acre of the plucked area being 205 lbs. in Madras; 250 lbs. in Coorg, 196 lbs. in Cochin, 147 lbs. in Travancore, and 160 lbs. in Mysore, and all-India average yield was 187 lbs. in 1953-54. This yield is much smaller than that obtained in other countries, e.g., it was 500 lbs. per acre in Brazil, 600 lbs. in Columbia, 480 lbs. in Guatemala, 450 lbs. in Dutch East Indies, and 400 lbs. in British East Africa.

Fifty per cent of the annual production of coffee is consumed in India. In 1954-55, coffee worth 722 lakhs of rupees was exported. The Indian coffee industry is, therefore, very much dependent on foreign markets. Indian coffee is exported to U. K., France, Germany, Holland, Australia, Belgium and Iraq.

Participating ports are Mangalore, Tellicherry, Calicut and Madras. The export of Indian coffee has fallen off considerably as a result of the competition of Brazilian coffee which today dominates the coffee market of the world. Indian Coffee Board is making efforts to find out markets inside and outside the country.

Rubber

India produces nearly 44 m. lbs. of rubber annually or just over 2 per cent of the total world output of natural rubber. Of the Indian production, not more than 50 per cent is first grade rubber, the rest being of lower grades. The rubber plantations in India began only in the beginning of this century, and some 30,000 acres were planted during the first ten years. In 1924 the area had increased to some 71,5000 acres and in 1953-54 the total area was in the neighbourhood of 169,000 and the production 44,700,000, lbs. acres. Practically whole of this area is situated in the West Coast of India including Travancore-Cochin and Malabar. Travancore ranks first in the production of rubber accounting for 60% of India's total followed by Madras 10%, Cochin 8%, Coorg and Mysore 2% respectively.

The average yield per acre is 300 lbs. The yield varies from 317 lbs. per acre in Cochin to 253 lbs. in Madras; 252 lbs. in

Travancore and 250 lbs. in Coorg. A particular feature of Indian rubber planting is that there are many thousands of small holdings, of anything from 1 to 50 acres, while estates of more than 100 acres are not more than 250 in number.

Indian rubber is mostly raised for foreign markets. The principal buyers of the Indian rubber are the U. K. Ceylon, Holland, Strait Settlements and Germany. The Indian Rubber Board is concerned with the production and marketing of the rubber.

Development programmes and other problems concerning tea, coffee and rubber have been examined by the Plantation Enquiry Commission. It is hoped to work out a programme for increase in production of tea up to 700 million pounds and the export up to 500 million pounds.

A fifteen-year development plan for coffee is being examined by the Coffee Board. This aims at additional production of 23,000 tons above the present level of 25,000 tons. Of this increase about 10,000 tons is proposed to be secured from intensive cultivation and rehabilitation of existing estates and 13,000 tons through reclamation and fresh plantings.

The Rubber Board has drawn up a scheme for replanting 70,000 acres of old rubber area at the rate of 7,000 acres a year and for bringing 10,000 acres of new area under rubber at 2,000 acres a year.

Spices

In India a variety of spices are grown particularly in South India, where climate is favourable and rainfall ample. The most important spices are :

1. *Pepper*. It is the berry of a vine-like climbing plant belonging to Southern India. It thrives in a moist climate with abundant rainfall. The plant grows wild in the forests of Malabar and Travancore and is extensively cultivated in and below the Western Ghats along the Malabar coast to Cape Comorin and also in Bengal. It is the most generally used of all spices.

2. *Chillies*. Chillies are most widely grown spices over wide tracts in India both as garden and field crops. Madras has the largest acreage and production and in this State the cultivation is particularly in the Guntur district and in the uplands of Godavari and Kistna. Outside Madras the chief producing areas are in the eastern and the northern Bengal and in some districts of Bombay and Eastern Rajasthan. The bulk of the chillies grown disappear, in local consumption. The dried fruit reduced to powder is the red pepper or cayenne of commerce.

3. *Ginger*. It is the dried root stock of a plant and has been cultivated in India for centuries. It is extensively cultivated on the Malabar coast, Surat, and the Thana district of Bombay, Rangpur district of Bengal and Kumaun district of U. P.

4. *Cardamoms*. Cardamoms are obtained from the humid forests of the western and the southern India where it is extensively cultivated at an elevation from 500 to 5,000 feet. They are mainly used for the medicinal purposes and for flavouring cakes and liquors. Oil is also extracted of them.

5. *Cinnamon*. It is the product of the two different trees, in both cases the bark of the smaller twigs. The better of the two is distinguished in commerce as the true cinnamon or Ceylon cinnamon. It is grown on the Western Ghats at altitudes up to 6,000 feet.

On the recommendations of the Planning Commission a Spices Enquiry Committee was appointed in 1951 to investigate the problems relating to the production and marketing of pepper, cardamoms, ginger, turmeric, cashew-nuts. It recommended the setting up of the experimental stations in the main pepper growing areas and creation of a fund for increasing the production of spices. Research in all six crops and the measures for the standardisation of quality and regulation of markets were also recommended.

Fruits and Vegetables

India with its diversities of climates and soils is pre-eminently well placed for the growth of a large variety of vegetables and fruits. Very little has been done so far, however, for improving production on scientific lines. According to Dr. Burns a rough estimate of the area covered by fruit trees was $2\frac{1}{2}$ million acres, and that covered by vegetables 700,000 acres in undivided India. According to the latest available information, the area under horticultural crops is about 4 million acres, of which about 3 million acres are under fruits and one million acres under vegetables. This accounts for a little over one per cent of the total cropped area. The estimated production of fruits is about 6 million tons and vegetables is about 4 million tons. This yields a consumption rate of 1.5 oz. per head per day in fruits allowing for a wastage of 25 per cent, and 1.3 oz. of vegetables per head per day, as against the requirements of a balanced diet of 3 ozs. of fruits and 10 ozs. of vegetables.¹

The regions producing fruits are the Kangra and Kulu valleys, South Kashmir, the Hill Districts of Assam, the Konkan

¹ *First Five Year Plan*, p. 158, *Second Five Year Plan*, p. 272.

coast of Bombay and the Nilgiri Hills in Madras. The selection of actual varieties of the fruits is governed by their cropping power, ability to travel long distances in good condition and the length of the fruiting season. In the uplands of North India all the ordinary European varieties can be grown, while the plains and South India are favourable to the growth of tropical fruits. The valleys of Kulu and Kangra are well known for pears, walnuts, apricots, peaches, almonds, apples, etc. Various kinds of oranges like the Santra, Malta, Mosambi and Kamala are largely grown in Assam, M. P., Bombay and Madras. The mango is grown extensively wherever the rainfall is liberal and the climate humid, as such the largest production comes from Bombay, S. India, U. P. and south-east Rajasthan, etc. Some important varieties of mango are grown in different States, *e. g.*, in Bengal, malda, himsagar, kishnabhog, mohanbhog; in Bombay mumrad and alphonso; in Bihar, hujli, langra and sipia; in U. P. safeda and langra; and in Godavari delta, totapari and beganpali. Banana, a tropical fruit, is grown in Bombay, Mysore, Madras, Travancore-Cochin, Assam and Bihar.

The expansion of fruit growing is restricted by primitive methods of transport and marketing. Centres like the Kulu and Kangra valley and the Assam Hills are inaccessible regions, where the only method of carrying is on head loads or on pack mules, so that it is very late when they reach the consuming centres with the result that deterioration has already set in before they are available for consumption.

Secondly, the fruits are often picked when green and unripe, and packed in old deodar wood boxes or wicker baskets with grass and leaves, which bring on fermentation, so that before the fruit reaches the railway van decay usually sets in,

Hence, the extension in the growth of fruits and vegetables can be achieved by extension in the area under cultivation of these crops and better utilisation of the cropped area by removing existing defects in the layout of gardens and the cultural practices. Besides efficient arrangements for grading and packing would increase the marketing facility. The provision of cold storage at assembling centres and also in the larger centres of distribution would prevent the present cycle of gluts and scarcities which characterise trade in most of these products. Surveying the whole field of fruit development, one gets the impression of much unco-ordinated activity, full of promise but a good deal of it rather academic and all badly requiring to have more and better attention both from the Centre and the States.¹

¹ W. Burns, *The Technological Possibilities of Agricultural Development in India*, p. 101.



The Second Five Year Plan proposes to increase the production of fruits and vegetables. This is necessary both for increasing the supply of protective foods and for bringing about greater diversity in the pattern of agriculture. The plan allots Rs. 8 crores for promoting fruit and vegetable cultivation. It is proposed to advance long-term loans to farmers for bringing new land orchards and also to provide short-term credit for rejuvenating existing orchards. For making plants and seed of suitable variety and quality available, new nurseries are to be established. The plan of States envisages the rejuvenation of about 500,000 acres of existing orchards and the growing of new orchards to the extent of 200,000 acres. The production of vegetables is to be encouraged, especially in the neighbourhood of towns, and schemes for the multiplication of nucleus potato seed are to be promoted. Considerable emphasis will be placed on building up marketing co-operatives of fruit and vegetable growers. The plan provides also for the development of fruit and vegetable preservation and canning industry through loans for establishing canneries and cold storage plants.¹ It is proposed to increase the annual production of canned fruit and vegetable from 20,000 tons to 50,000 tons.

Fisheries

Fisheries contribute annually about Rs. 10 crores to the national income. Rich in proteins, vitamins, and mineral salts, they supply a valuable protective food and stand almost equal to agriculture and animal husbandry.

India has a coastline of 2,920 miles exclusive of indentations and the total area of the sea which lies between the coast and 100 fathom line is approximately 110,000 sq. miles. At present sea-fishing is carried on within 10 fathoms in the sea. The sea fisheries are confined to the coastal water from the shore in Gujrat, Canara, Malabar coast, Gulf of Mannar, Madras coast and the Coromondal coast. In these areas herrings, jew-fish, cat-fish, mackerel, mullets, pomfrets, prawns, and salmon are caught. The unsuitability of vessels, limitations due to climate, absence of suitable harbours and the lack of refrigeration, transport and marketing facilities are serious handicaps in the way of the development of the marine fisheries in India.

The deltaic fisheries are confined to the estuaries, back-water areas, lagoons, and generally constitute very rich potential fisheries. While the fisheries in some areas, such as the Chilka Lake in Orissa, backwaters in Madras, Travancore-Cochin, are extensively exploited, those on the extensive deltaic area of the Sunderbans and the delta of the Mahanadi are hardly tapped. The impor-

¹ *Second Five Year Plan*, 1956, p. 274.

tant catch consists of cock-ups, hilsa, pomfrets, prawns, catla, rohu, mullets, bekti, and cat-fish.

The river fisheries at present constitute the mainstay of inland fisheries of India and are carried out in rivers, canals, irrigation channels, tanks, and ponds. The extensive expanses of the Gangetic system in the U. P., Bihar and West Bengal, the Brahmaputra in Assam, the Mahanadi in Orissa, the Narbada, the Tapti, the Godavari, the Kistna, the Cauvery systems in South are the main areas.

The present production of fish is 1.1 million metric tons, 70 per cent being sea fish and 30 per cent fresh water. One-half of the total production is consumed as fresh fish; one-fifth is cured by salting, another one-fifth is simply sun-dried, while about ten per cent is converted into fish fertilisers. The per capita consumption of fish in India is 3 lbs. per annum, West Bengal being the leading consumer having 6 lbs. of fish per capita, in the East Punjab, it is 0.9 lbs. and in Bihar, 2 lbs. as against 16 lbs. in Ceylon, 70 lbs. in Burma, and 90 lbs. in Japan.

A sum of Rs. 5.14 crores was provided in the First Plan for fishery development. Since the beginning of the plan, the development of the inland fisheries has made satisfactory progress in Madras, Bombay, Orissa and Bihar. Mechanisation of the existing boats and the introduction of new powered craft were given high priority in the Plan. Boats have been mechanised in Bombay and Madras. In Travancore-Cochin, a 20-ft. model boat has been found suitable for adoption. Deep Sea Fishing Station, Bombay has completed charting 12,000 sq. miles within a 40-fathom line of the Bombay and Saurashtra coasts.

The Second Plan provides about Rs. 12 crores for the development of fisheries. During the Second Plan, the fish production will rise by 33% *i. e.* to about 1.4 million metric tons. The schemes envisage the expansion of off-shore and deep sea fishing and for this purpose additional exploratory off-shore fishing stations will be established on the western and eastern coasts and in the Andamans a fisheries technological station will also be set up. The number of the extension units for demonstrating the latest techniques in fish farming and fishing methods will be increased. Provision has been made for establishing 18 ice-plants and cold storages and 10 freezers and refrigerators. Problems relating to the utilization of fish and other marine products and processing and storage of fish and fishing accessories will be investigated and the efforts will be made to organise and develop Fishermen's Co-operative Societies and fisheries requisites.¹

¹ *Second Five Year Plan, Op. Cit.*, p. 97.

CHAPTER XII

THE FOOD PROBLEM

The fundamental problem for humanity has been and still is the problem of survival. Consequently, the need for food is vital and so also the competition for food between nation and nation in the existing frame-work of nation states. Most of man's existence has been blighted with food shortage and even after some hundreds of thousands of years of striving, man has failed to obtain a decisive victory in his struggle for existence. Prof. Castro has rightly remarked, "Two-thirds of the world's population live in a permanent state of hunger." Malnutrition, starvation and occasional famines have been more or less endemic under Indian conditions. In the 19th century there were 31 famines of which a very high proportion (about 18) occurred in the last quarter of that century. Famines in the 19th century were due not to the actual shortage of food in the country in relation to the total requirements of its population but to the lack of transport facilities and consequent difficulty of moving supplies from one part of the country to another. Indian agriculture is even now dependent on the extent and distribution of rainfall and it was even more so in the 19th century. Regional shortages have, therefore, been quite common in this country and because of transport difficulties, such regional shortages very often used to result in famines.

Towards the end of the 19th century, it was hoped that with the increase in transport facilities and probable improvements in agriculture effected through State Aid, it would be possible to remove any danger of famines or even under-nutrition in India, even though the Famine Commission had as far back as 1880 sounded a note of warning that excessive pressure of population on land was resulting in inefficient cultivation of land and lower per capita availability of food. In this context, it is worth noting that the Famine Commission had at that time declared the country, taken as a whole, to be definitely surplus in food to the tune of 5 million tons. But two of the members dissented from this conclusion and they opined that the average annual export of rice and wheat from all India is one million tons, which should thus leave 4 million tons to be laid by, a quantity sufficient to feed 24 millions of people but both the sides argued that India was then normally surplus in foodgrains—although they differed on the point whether or not, in the worst famine year, the stocks available

would physically exceed the requirements of consumption. The quantity exported was 26,210,000 cwts. in 1876-77 but it had fallen to 22,887,000 cwts. in 1878-79. These figures indicate an average of about 12 lakh of tons per annum as the level of food-grains at the time. The following table shows the figures of exports and imports of food-grains for the five-year period from 1890-91 to 1909-10 in undivided India :—

Period	Exports (In lakhs of tons)	Imports	Net Exports
1890-91 to 1894-95	14.5	2.1	12.4
1895-96 to 1899-1900	11.0	4.8	2.4
1900-01 to 1904-05	16.6	6.2	10.4
1905-06 to 1909-10	14.8	9.6	5.2

The first half of the famine decade shows the level of net exports to be much the same or a little above the level reached some 15 years earlier, and described by the Famine Commission of 1880. The second half shows a sharp drop reflecting the crop failures which led to famine. Then there is a recovery during the first five years of this century followed by a drop. The decade as a whole shows a small decline of about 3 lakh tons in 10 years which may not be specially significant. But the trend shown in the table below was undoubtedly quite significant :—

Period	Net Exports out of undivided India and Burma (In million tons)	Net exports out of undivided India	Net Exports out of Burma
1890—1895	2.54	1.24	1.30
1895—1900	2.14	.62	1.52
1900—1905	3.16	1.04	2.12
1905—1910	2.84	.52	2.32

There was the rising tempo of exports of good grains from Burma. The main reasons for this situation were the suppression of civil order, settlement of title to land on durable and secure tenures, development of transportation and creation of a free market, etc. The policy of non-interference with private trade in grain worked successfully for nearly 40 years, because India, Pakistan and Burma formed a single trading unit and this combined unit had a large growing and exportable surplus of grain.

The following table shows the export and import trade in foodgrains since 1905-10 to 1935-40 :—

Year	Exports (+)	Imports (-)	In million tons
	India including Burma	India excluding Burma	Burma
1900-05	+3.16	...	...
1905-10	+2.84	...	...
1910-15	+4.22	+1.95	+2.27
1915-20	+2.59	+ .40	+2.19
1920-25	+2.48	— .16	+2.64
1925-30	+2.03	— .77	+2.80
1930-35	+1.85	—1.27	+3.12
1935-40	+1.46	—1.39	+2.85

The above figures are illuminating. They show that India excluding Burma had a surplus of 1.95 million tons of foodgrains during the five years period 1910-5. This was the period during which India was one of the five principal exporters of wheat in the world and her annual export of wheat was of the order of 1.3 million tons. The surplus became nominal during the next five years and actually turned into a deficit after 1920. The deficit gradually increased during the next 20 years from .16 to 1.39 million tons. Burma, on the other hand, increased her surplus of rice from 2.27 million tons in 1910-1915 to 2.85 million tons in 1935-40.

India's food position was quite good till the outbreak of the World War II. Although her surplus of food-grains was turned into a deficit by the separation of Burma in 1937, the deficit was small compared with the size of her agricultural and industrial production. But the war transformed the food economy of India beyond recognition and the food position of the country deteriorated considerably. Rice imports from Burma had been suddenly cut off in 1942 with the fall of that country into Japanese hands. The demand for wheat had already increased as a result of the quartering of Allied troops in different parts of India. There was a failure of crops in Bengal and panic among the civilian population of that State following the air-raids in Calcutta and fighting on borders. The situation further deteriorated rapidly in 1943 when the Bengal famine showed the ghastly appearance, when 3.5 million people died of starvation. At this time the imports of food-grains stopped more or less completely as the countries like China, Thailand, Java, Indo-China on which export India used to depend were occupied by the enemy forces. Thus, on the one hand, the demand for food increased and the supply position, on the other hand, deteriorated specially because during the war Government gave priority to the war traffic which

was necessary than to the transport of food-grains. The imports of food-grains into India dwindled and almost dried up with the fall of food-exporting countries into enemy hands, as shown by the figures of imports of food-grains during the war years :—

Year (Financial)	Imports into India (In million tons)
1940-41	·963
1941-42	·432
1942-43	—·292
1943-44	·298
1944-45	·726
1945-46	·931
Total	3·058

Thus it will be observed that India was able to import only half a million tons of food-grains per year on the average during 6 years between 1940 and 1946. Before the war the average import was 1·39 million tons. Nevertheless the net loss on balance of payments account was proportionately larger as prices of imports rose more than of exports. In the period 1921-22 to 1929-30 we had a net loss of 5 million rupees a year; this loss increased to Rs. 78 millions during 1930-31 to 1939-40 and to 199 millions rupees in 1940-41 to 1946-47.¹ In spite of the increase of demand during the war, the imports had to be restricted so that the quantity of food-grains imported fell from 1·74 million tons in 1931 to 40 to 1·008 million tons in 1940-46 and this led to the depletion of reserve stocks in the country; and consequently the scale of ration which was of the order of 18 ozs. per adult was reduced to 12 ozs. by 1946. By the beginning of 1944, 24 million people were receiving food rations in the area comprised in the Indian Union. The number gradually increased to 50 millions by March 1946.

The termination of war brought about political changes in India of a far-reaching character. The partition of the country into India and Pakistan on August 15, 1947, further deteriorated India's food deficit. The food surplus areas of West Punjab, Sindh and East Bengal went over to the share of Pakistan, while the food deficit areas of Madras and Orissa came to the Indian Union. This reduced her agricultural production and created additional difficulties regarding both the food-grains and raw-materials like cotton and jute. As a result of the partition, India retained about 81%

¹ *Indian Journal of Agricultural Economics*—Fifteenth Conference Number (1954) Vol. X, No. 1, p. 95.

of the total population of the Undivided India, nearly 77% of the total area, 72.5% of rice acreage and 70% of wheat and 70 % of irrigated area. In respect of irrigation 36% of Pakistan's cultivated area had the benefit of irrigational water supply, whereas in India only 18% of the cultivated area had a similar advantage. Thus Pakistan got more of cultivated as well as irrigated land to feed a comparatively small percentage of population. The food situation was aggravated still further with an addition of about 10 million displaced persons from West and East Pakistan. These evacuees shook the tottering debris of our food economy to its very foundations and the problem became more serious than ever before.

The following figures give an indication of the Indian Union's trade in food-grains with the territories which went over to Pakistan on the partition in 1947 :—

Year		Net Imports into India (Million tons)
1936-37	} (Average)	·771
to		
1938-39		
1939-40		
1940-41		1·072
1941-42		1·045
1942-43		0·885
1943-44		0·927
1943-44		1·119
1943-44	} Kharif & Rabi	·928
1944-45		
1944-45	} Kharif & Rabi	·928
1945-46		
1945-46	} Kharif & Rabi	·388
1946-47		
1946-47	} Kharif & Rabi	·324
1947-48		
(Upto 15th August, 1947.)		

These figures show that while Pakistan contributed a surplus of 771,000 tons on the average in the pre-war period, her contribution during the war increased to an average of 936,000 tons. Movement of food-grains from the States included in Pakistan dropped heavily in 1946 and 1947 owing to the disturbed conditions which preceded the division of the country. India's food deficit thus increased by nearly a million tons by the separation of Pakistan in addition to a deficit of 1·39 million tons caused by the separation of Burma. Thus serious blow to India's food economy came in the wake of depletion of reserve stocks and the necessity for imports increased correspondingly. Further, for some period

before and after partition, production suffered particularly in the Indian States bordering on Pakistan and they could not contribute their full quota of food-grains to the central pool.

The partition was further compounded by a series of droughts, locusts, floods and earthquakes. The successive failures of monsoons in the south and cyclones in the Northern Circles intensified the rice situation in Madras. Similarly excessive rains and wheat rusts in M. P. and Berar, floods in U. P. and Bihar and cyclone in Bombay and failure of crops due to drought in western U. P. and Rajasthan contributed in no mean measure to a marked deterioration in the food situation in as much as these factors tended to increase the deficits of the deficit States and to decrease the expected exports from the surplus States.

Inflationary tendency during the war years (1939-46) resulted in greater demand for commodities and this pushed up the prices particularly of food-grains. During the years 1945-53 the wholesale prices of agricultural commodities recorded a continuous and alarming rise. The Index Number of the wholesale prices of cereals, was 268 in August 1945 · 304 in Aug. 1946; 352 in Aug. 1947; 382 in Aug. 1948; 389 in Aug. 1949; 402·2 in Aug. 1950; 437 in Aug. 1951; 387·2 in Aug. 1952; 410·4 in Aug. 1953. However, it fell to 382·3 in Aug. 1954.¹ It was expected that an increase in prices of food-grains would give an incentive to more production but this hope was not fulfilled. Since the fixed costs like land revenue, rent, etc., were not much affected by a rise in prices they could be met with by selling a smaller amount of produce, *i.e.*, with 20 to 25% the produce. Whatever remained of an additional income was utilised in repayment of old debts. More was left for the cultivator to eat. This increased consumption of food-grains in the absence of proportionate increase in the quantity produced naturally left less food for the non-agricultural classes. A scarcity of food, therefore, became visible.

Besides, during the past few decades, while the population of India has been increasing, the increase in the net area sown with crops has been extremely slow and gradual as will be clear from the following table :—

Sown Area Per Capita

Year	Population (millions)	Net area sown (in million acres)	Net area sown per capita (in acres)
1911-12	231·6	202·0	0·88
1921-22	233·6	207·2	0·89
1931-32	256·8	211·4	0·82
1941-42	295·8	214·0	0·72
1951	356·9	266·4	0·75

¹ *Supplement to Agricultural Situation in India*, Nov. 1954, p. 78.

The area under land cropped and left fallow in Br. India increased from 242 million in 1901-02 to 272 million acres in 1913-14. Whereas during this period the population increased from 284 million in 1901 to 308 million in 1911, *i.e.*, by 67%. In the decade from 1911 to 1921, the net area sown for British India was 202.6 million acres in 1911-12, and 251.5 million acres in 1920-21, whereas the population increased during the period by 4 millions to 319 million in 1921. The net areas for all India increased to 280.9 million acres in 1937-38, while the population increased to 382.8 million in 1931 and to 389 million in 1941 in undivided India.

According to the index numbers calculated with the base as the average of five years 1910-11 to 1914-15=100, the population rose from 100 in 1921-22 to 120 in 1934-35, while the total cropped area rose from 113.4 in 1921-22 to 117.2 in 1934-35. From this an inference can be drawn that though the rate of expansion in the total cropped area has just gone ahead of the rate of population increase, the area under food-crops has definitely lagged behind. Whether the extension in area under cultivation and improvement in agricultural production were mainly due to pressure of population has been a controversial issue. M/s. Bowley and Robertson were decidedly of the view that, "the figures of agricultural production are at present quite insufficient to determine whether or not food is increasing in proportion to population."¹ The important fact to note is that the increase in cultivated area has been partly due to the land hunger and partly to the extension of irrigation facilities provided by the State. The relative importance of the two factors is not known and cannot be estimated. The per capita area sown recorded actually a declining trend from 0.88 acres in 1911 to 0.75 in 1951.

The Planning Commission point out that, "the Indian economy has been more or less stagnant and has failed to meet the demands of a rapidly growing population . . . Sown area has shown a steady tendency to decline. The sown area per person went down from 0.89 acre in 1911-12 to 0.83 acres in 1921 ; to 0.82 in 1931 and to 0.75 in 1951"¹ 0.72 acre in 1941-42.

According to the Census Report of 1951, during the thirty-year period, 1891-1921, the cultivated land per capita moved up and down slightly, and was a little higher at the end than at the beginning. It was 109 cents per capita in 1891, 103 in 1901 and

¹ *Draft Outline of the First Five Year Plan* (1951) p. 14 Sir John Russell estimates the per capita sown area at less than 8 acre, "which is about one-sixth of what would be required to produce our present British dietary at India level of yield." Food Production Problems in India, in *International Affairs*, Vol. XXVII (1952) p. 15.

109 in 1911 and 111 cents in 1921. In the following thirty years, 1921-51, it came down substantially by nearly one-quarter of the 1921 level, i.e., it came down from 111 cents per capita in 1921 to 104 cents in 1931, 94 cents in 1941 and 84 cents in 1951. In spite of an increase in the double cropped area from 99 lakh acres in 1891 to 125 lakh acres in 1951, the production has not kept pace with the rate of growth of population.¹ The same evidence of decline in per capita (from 18 cluts to 14 cluts) irrigated area is to be found between 1891 and 1951.

The Report from a study of the land under cultivation of eight "natural" divisions and some of the districts of five other divisions, covering 120 million people, observes that the acreage of net area sown was 91.5 million in 1911; 92.7 million in 1921; 94.3 million in 1931; 95.8 million in 1941 and 99.1 million in 1951. Dividing the area of cultivated land by the population we obtain the area of cultivated land *per capita*, as indicated in the previous para. The Report supplies us the following table for double cropped land and irrigated land per capita in these areas² :—

Double Crop Area Per Capita
(in Cents)

Districts	1891	1921	1951
North India Districts	18	19	15
South India Districts	7	8	7
West India Districts	4	5	4
Central India Districts	4	5	10
All-India	12	13	10

Irrigated Area Per Capita
(in Cents)

Districts	1891	1921	1951
North India Districts	19	25	19
South India Districts	18	16	14
West India Districts	7	8	8
Central India Districts	2	2	2
All-India	16	18	14

The Report concludes that during these 30 years, the area of cultivated land *per capita* declined significantly in U. P., Bihar Orissa, Assam, Madras, Mysore, Bombay, Travancore-Cochin, Madhya Pradesh and the Punjab. There is little doubt, that if correct figures of cultivation had been available for other States

¹ *Central of India*, 1951, Vol I. Pt. I., p. 141.

² *Ibid.*, p. 146.

a similar decline would have been observed in all of them.¹ With the decline in the cultivated land per capita, the share of food and other produce of cultivation available to each individual is declining. Thus it 'remarks that it is "an all-pervasive fact" that whilst the area of cultivated land, and double crop and irrigated area decreased since 1921, population during the same 30 year-period increased very much faster.

The structure of relative prices during the last few years has been such that the relative profitability of food crops has been lower than that of the commercial crops, with the result that there has been a diversion from cereal to non-cereal production.

The proportion of the total area under food-crops has declined while that under commercial crops has increased. The average under food-crops has not kept pace with the growth in population and there is actual fall per head. The decline in acreage per head under food-crops is revealed more clearly from the following estimates made by Dr. Burns for the period up to 1941,² and for 1951 calculated by me :—

Year	Average per head under food-crops (including all food-grains, sugarcane, vegetables, fruits, condiments)
1911	0.83
1921	0.86
1931	0.79
1941	0.67
1951	0.67

Sir John Russel categorically observed by reference to the table which we reproduce below, that the official figures as they stand show that the acreage under food-crops unlike that under cash-crops has not kept pace with the growth of population ; on the contrary there is an actual fall in the acreage per head."³

Comparing the areas of land under different crops between 1915-16 and 1935-36 in the then British India, he gives us the following summary, along with another table :—

Summary	Thousand acres
Increase in net area sown	8,360
Increase in food-crops	4,132
Increase in non-food crops	4,960

¹ W. Burns, *Technological Possibilities of Agricultural Development in India*, p. 21.

² *Ibid.*, pp. 15-16.

³ *Ibid.*, p. 154.

Area Per Head of Population in British India

Items	1903-04 to 1907-08	1908-09 to 1912-13	1913-14 to 1917-18	1918-19 to 1922-23	1923-24 to 1927-28	1928-29 to 1932-33
1. Net area sown acre per head	0 883	0·906	0·918	0 879	0 868	0·841
2. Area under food-crops per head	0·829	0·862	0·873	0·833	0 803	0·785
3. Acres under food-crops per head omitting sugar	0 818	0·852	0·862	0·822	0·792	0·774
4. Acres under non-food crops per head	0·053	0·043	0·045	0·045	0·065	0 057
5. Population in millions	237·6	343 3	245·8	246·9	259·2	271·5

This table leads us to the conclusion that while population during these 30 years increased by 34 millions, acreage under food crops increased by 4 million acres. The areas under cotton, sugarcane and jute have risen corresponding with the increased area under irrigation, and the increase has kept pace with the increase in population, the average per head being 0 045 in the earlier and 0·057 in the latter of the two periods. On the other hand, the acreage under food-crops shows much less rise, and, if figures can be accepted, the acreage per head of population has actually fallen. The following tables clearly show the trend :—

Area in Million of Acres

Year	Under Food-Crops	Under Non-Food-Crops	Under Cotton and Jute
1913-14	190	42	19
1927-28	192	45	18
1939-40	197	47	25
1940-41	198	50	29

Index Numbers showing increase in Area with 1913-14 as base year

1913-14	100	100	100
1927-28	101	107	95
1939-40	104	112	132
1940-41	104	119	153

These tables clearly indicate that whilst acreage under food-crops increased by 4 per cent in these thirty years, the acreage under commercial crops increased by 53 per cent.

We can see in this agricultural trend the outcome of the absence of a national policy. The entry of India into the international market under the British regime naturally led to changes in agricultural production which gave an incentive to the cultivation of cash-crops in preference to food-crops. This trend in the direction of cash-crops was further established by the interest of the Government Departments of Agricultural Research and Experimental Farms in improving the quality and introducing new varieties of cash crops, while food crops were neglected. No attempt was made to arrest the unhealthy trend till recently when the stress of war revealed our very precarious food position, as well as the problem of markets for our short staple cotton. The food-crops grown in place of cotton were bajra and jowar, while area under jute was diverted to rice mostly as a result of the high price of rice.

As a substantial proportion of the land under jute and cotton has been transferred to Pakistan after the Partition, the area under cash-crops should have materially declined. But the desire to be self-sufficient in cotton and jute—because of the unfortunate differences with Pakistan—had led to an appreciable increase in area under these two crops from 9,812,000 acres to 11,458,000 acres under cotton and from 818,000 to 1,278,000 acres under jute in the period 1947-48 to 1949-50. This increase in the area under these two fibres would otherwise have gone to the production of food which the country so badly needed.

The decline in the average per head under food-crops might not mean a small food supply per head if it had coincided with an increase in the yield of crops, but there is little evidence to show that the yield per acre has increased during the past few years. "The average yield of major crops in India are only the lowest in the world but that the unsatisfactory position is further accentuated by the fact that the yields have been progressively declining year to year—"due to lack of humus and fertilisers and the practice of using cowdung as fuel."¹ In the case of rice, the average yield has decreased from 793 lbs. per acre in 1936-39 to 699 in 1948-49; in case of wheat from 618 to 573; in case of gram from 543 to 519 and in case of jowar from 659 to 529 during the same period.

1 *Proceeding of the 8th Meeting of the Crops and Soils Wing of the Board of Agriculture* (1952), pp. 81-83.

The shortage of cereals is an indication of the basic problem of a population growing faster than its means of subsistence, as would be clear from the following figures¹ :—

Index No. for Area under Food-Crops & Population (1947-48=100)

Year	Area	Rice	Wheat	Others	Total	Population
1947-48	100	100	100	100	100	100
1948-49	108.5	106.4	101.1	89.1	99.04	110.9
1949-50	113.5	109.03	112.9	97.9	105.2	115.8
1950-51	112.2	95.3	114.2	89.4	95.4	121.9
1951-52	112.1	98.6	109.3	93.4	98.0	123.6
1952-53	118.0	105.9	140.6	118.1	113.3	127.7
1953-54	122.2	127.4	138.1	125.6	128.3	129.4
1954-55	121.4	113.9	153.0	133.5	126.5	130.9

A close perusal of this table reveals that whereas the area under food-crops increased by 21.4%, and the total food production by 26.5% over the 1947-48 figures, the population increased by 30.9%—which fact is a clear proof that in India population is growing at a faster rate than both the area under food-crops and the total food production.

In India the production of foodgrains declined after Independence. In 1950-51, the output of food-grains amounted to 41.74 million tons as against 46.02 million tons in 1949-50 and 43.3 million tons in 1948-49 and 43.74 million tons in 1947-48.² The fall in food production took place in spite of G. M. F. Campaign because (i) of the greater emphasis on reclamation of new land rather than on increasing the production on the land already under cultivation; (ii) the inefficiency and dishonesty of the officials of the campaign; (iii) the half-hearted co-operation of the cultivators with the scheme; (iv) and the switch-over from self-sufficiency in food-grains to the integrated policy of food-grains, cotton and jute. G. M. F. Campaign began to show better results only after the extension of area under irrigation.

Consequences of Food Shortage

(i) *Large Imports.* The scarcity in food-grains led to large imports from abroad. The quantity imported ranged from 2.33

¹ *Supplement to Agricultural Situation in India* (Nov. 1954), p. 78.

² *India*, 1955, pp. 165-166.

million tons in 1947 to 2.84 in 1948 ; 3.70 in 1949 ; 4.73 in 1951 ; 3.86 in 1952 ; 2.00 in 1953 as would be clear from the following table¹ :—

	<i>Imports of Food-grains</i> Quantity in millions of tons	Value in crores of Rupees
1944	0.64	13.0
1945	0.85	20.4
1946	2.25	76.11
1947	2.33	93.99
1948	2.84	129.7
1949	3.70	144.6
1950	2.13	79.8
1951	4.73	216.3
1952	3.86	209.7
1953	2.00	85.96
1954	0.80	33.00
1955	0.70	

(ii) *Severe Drain on Foreign Exchange.* These figures do not indicate the full extent of food deficit in the country because a large quantity was not only wasted but was also hoarded by the greedy merchants. These large imports from abroad resulted in a severe drain on country's slender financial resources. We had an adverse balance of payment to the tune of Rs. 78 million rupees in 1930-31 to 1939-40 and Rs. 199 million rupees in 1940-41 to 1946-47. This amount increased to 1297 million in 1948 ; Rs. 1,446 million in 1949 ; Rs. 2,163 million in 1951 ; and 2,097 million in 1952.² However, it declined to Rs. 859 millions in 1953, Rs. 500 millions in 1954 and 627 millions in 1955. Apart from this heavy drain of our foreign exchange resources, it also involved the Government in heavy emergency expenditure on revenue account by way of subsidies. The expenditure on food subsidy increased from 22.55 crores of rupees in 1946-47 to 25.58 in 1948-49 and to 46.09 crores in 1951-52.³

(iii) *Introduction of the System of Rationing.* The food-shortage also led to introduction of the system of rationing of food supplies. By the beginning of 1944, 24 million people were receiving food rations. This number increased to 50 millions by March 1946, and to 145 millions by Dec. 1947, but after that it began to decline so that by Dec., 1948, it was only 80.4 million. It again rose to 119.6 million in 1948 to 124.5 in 1950 and fell again to

¹ Supplement to *Agricultural Situation in India*, Ibid. p. 7B.

² *Indian Journal of Agricultural Economics*, (Vol. X, No. 1, 1957) p. 95.

³ Gopala Krishnan, P. A., *India's Food Problem* (1953), p. 23.

121.9 million in 1951, 118.7 in 1952 and 83.39 in 1953. By June 30th, 1954, the strength of rationed population was only 29.00 million.¹

(iv) *Fall in Internal Consumption.* The food-shortage affected the internal consumption of cereals to a very great extent so that in spite of large imports the per capita availability had shown a clear downward trend. The average supply which was 470 lbs. per adult per year in the 1920's declined to 400 lbs in 1930-31, to 328 lbs. in 1940-41 and to 316 lbs. just before the partition and to 303 lbs. immediately after the partition. However, the supply position improved after the immediate effects of partition spent their force. The average supply for the post-partition period as a whole is 329 lbs. though it was as low as 312 lbs. in 1951 and as high as 376 lbs. in 1953. The following table shows the supplies of cereals per adult per year² :—

*Supplies of Cereals per adult per year
1921-1922—1953*

	Pre-Partition				Post Partition					
	1921-22 1929-30	1930-31 1939-40	1940-41 1945-46	1947-48 1953	1948	1949	1950	1951	1952	1953
Total production (mn. tons)	...	...	...	...	43.3	46.0	41.7	42.8	49.5	56.1
Net production (mn. tons)	49.4	50.3	50.9	40.4	38.3	37.9	39.8	37.5	43.0	49.0
Imports (mn. tons)	+1.1	+1.7	+1.0	+3.1	+2.8	+3.7	+2.1	+4.7	+3.9	+2.0
Exports (mn. tons)	-1.0	-0.5	-0.2	...	...	...	...	...	...	...
Total supplies in (mn. tons)	49.5	51.5	51.7	43.5	41.1	41.6	41.9	42.2	46.9	51.0
Adult population (mns.)	275.3	310.4	328.7	302.7	295.3	299.0	302.7	306.4	310.1	313.8
Supplies Per Adult										
Year in Lbs.	428	399	360	329	336	337	335	312	332	376

The food position has improved since 1951. The output of foodgrains has recorded a satisfactory increase since 1951. The output of cereals increased from 41.7 million tons in 1950-51 to

¹ *Supplement, Op. Cit.*, p. 78.

Statutory rationing was abolished first in Madras on 6th June 1952. Soon U. P. Bihar followed the example of Madras and by September 1952, the process of decontrol began in six States. In 1953, control was withdrawn completely from the distribution and prices of foodgrains.

² *Indian Journal of Agricultural Economics* (Vol X, No. 1, 1954) p. 95.

³ Net Production is calculated at 87% of gross production, 12 % being taken for seed and wastage.

42·8 million tons in 1951-52; 49·5 million tons in 1952-53 and 58·30 million tons in 1953-54. It was 55·33 million tons in 1954-55 and about 65·0 million tons in 1955-56.

Index Number of Agricultural Production in India

(Agricultural Year 1949-50=100)

Commodity group	Weight	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56
1	2	3	4	5	6	7	8
I. Foodgrains							
(a) Cereals—							
(i) Kharif—							
Rice	35·3	87·9	90·1	96·8	118·6	105·5	109·6
Jowar	5·0	89·8	96·4	106·6	117·0	133·4	101·8
Bajra	2·7	83·8	75·8	94·8	135·0	106·3	105·7
Maize	2·1	84·4	101·3	123·3	130·2	127·9	107·6
Ragi	1·2	87·6	80·4	82·0	115·0	108·8	121·9
Small Millets	41·5	88·9	97·4	97·9	125·9	127·0	108·8
Total Kharif Cereals	7·8	87·7	90·4	98·5	120·0	110·2	10·8
(ii) Rabi—							
Wheat	8·5	101·1	93·9	112·7	120·0	133·7	127·1
Barley	2·0	105·6	100·0	122·4	123·2	121·7	115·4
Total Rabi cereals	10·5	102·0	95·1	114·5	120·6	131·4	124·9
Total cereals	58·3	90·3	91·2	101·4	120·1	114·0	111·7
(b) Pulses—							
Gram	3·7	98·0	88·2	109·2	125·4	142·2	128·3
Tur	1·1	91·8	97·7	90·9	99·5	91·6	98·4
Other pulses	3·8	85·6	90·2	90·9	102·6	100·6	93·1
Total pulses	8·6	91·7	90·3	98·8	120·0	117·3	108·9
Total food-grains	66·9	90·5	91·1	101·1	119·1	114·4	111·3
II. Non-foodgrains—							
(a) Oil-seeds—							
Groundnut	5·7	101·4	93·0	85·3	100·3	122·1	112·5
Sesamum	1·2	101·6	103·2	106·9	127·6	135·7	105·5
Rape and mustard	2·0	94·6	116·0	105·5	107·3	127·4	104·0
Linseed	0·8	87·8	77·1	86·0	89·1	89·8	88·4
Castorseed	0·2	80·5	82·8	79·7	80·5	96·9	98·5
Total oilseeds	9·9	98·5	97·4	91·9	103·7	121·7	107·7
(b) Fibres—							
Cotton	2·8	110·7	119·2	121·0	151·8	163·1	154·3
Jute	1·4	106·3	151·4	148·6	100·0	94·7	133·8
Mesta	0·3	10·0	104·8	103·3	98·5	154·3	182·0
Total Fibres	4·5	108·6	128·3	128·4	132·1	141·2	149·8

Commodity group	Weight	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56
1	2	3	4	5	6	7	8
<i>(c) Plantation crop—</i>							
Tea	3.3	103.8	109.6	115.4	100.6	110.7	114.2
Coffee	0.2	112.3	112.7	125.9	149.5	148.1	169.9
Rubber	0.1	93.8	94.4	106.1	131.8	127.6	133.5
Total Plantation crops	3.6	104.0	109.4	115.7	104.0	113.2	117.8
<i>(d) Miscellaneous—</i>							
Sugarcane	8.7	113.7	122.8	101.6	89.5	116.7	118.7
Tobacco	1.9	97.3	78.0	91.3	101.5	93.9	99.5
Potato	1.0	107.4	110.8	128.9	126.5	115.8	123.5
Pepper	1.2	97.2	107.5	102.8	113.3	122.8	129.5
Chillies	2.0	119.4	118.4	98.0	104.9	125.7	117.7
Ginger	0.3	94.4	96.0	89.6	90.9	92.2	98.1
Total Miscellaneous	15.1	110.3	114.0	101.5	97.4	115.0	116.9
Total non-food-grains	33.1	105.9	110.5	103.8	104.7	120.4	118.7
All Commodities	100.0	95.6	97.5	102.0	114.3	116.4	113.7

This increase in the production of food-grains was due to (i) satisfactory weather conditions, (ii) the success of the Integrated Production Programme (which was started in 1950-51), (iii) the use of the Japanese method of rice cultivation, (iv) a greater supply of irrigation water, and (v) subsidised fertilisers to the cultivators.

Unfortunately due to bad weather conditions the food-grains production fell during 1956-57 so that the prices rose high, with the result that the Government had to open fair price shops in the States and hoarding of grains has been penalised.

Estimates of Food Requirements

In no country it is easy to determine the exact amount of food produced from year to year, and in India the difficulties are exceptionally great. This is because the information is based on the data which are of uncertain accuracy, incomplete and consequently inconclusive.² "Our knowledge of the absolute magnitude of either production or consumption is subject to a wide margin of uncertainty—so wide that it is larger than the magnitude of our shortage."³

¹ *Agricultural Situation in India*, Aug. 1950 pp. 328-329.

² *Census of India*, 1951, Op. Citi., p. 137.

³ *Final Report of the Famine Enquiry Commission*.

Hence, it is true to say that the extent of food shortage cannot be known in exact physical volume since neither the total food supply nor the total requirements are known exactly. Owing to lack of dependable statistics regarding total acreages under different crops and their total turn-over each year and due to wide prevalence of hoarding it is difficult to state precisely the exact quantities of our deficit. Regarding the supply, 1/3 of the area agricultural statistics are not reported, the output of most of the inferior foodgrains is not reported, whatever statistics are available their accuracy is doubtful and the output of the subsidiary foods too is not accurately known. Regarding requirements, the total population and the ratio of age groups and the dietetic scales, the food habits and the requirements of industries are only roughly estimated. Due notice has also to be taken in respect of the quality of grains, losses involved in transport, shortage and due to crop pests, disease, etc., after making the final forecasts of crops. The needs of the farmer for purposes of seeds, payment of labour and for family consumption are equally complicated problems estimating the procurable surpluses with each of the producers.

The food deficit may be expressed in terms of deficit areas, percentage of population of under-fed and physical quantity of grains. In terms of area, whole region falling between 20 and 30 inches line of rainfall is a famine-tract. To this may be added the occasionally flooded areas of eastern U. P., Bihar, Orissa and Assam. In terms of population, the shortage as accepted by the F. A. O. is for about 1/3 of the population, if the remaining 2/3 is fed adequately. In terms of quantity of grains, there was a net shortage of about 8 million tons on the basis of 14 ozs. per head per day—according to Famine Commission, and of 4 to 5 million tons according to Central Government—on the basis of 12 and 16 chattaks of foodgrains per adult per day in urban and rural population. This implied 10% increase on 1947-48 level of production by the end of 1956. The Second Foodgrains Policy Committee recommended a target of increasing production by 10 million tons annually.

Since the population is likely to increase to 410 millions in 1961 and 450 millions in 1971, it is essential to undertake measures for enlarging internal food production. The Planning Commission estimated the requirements for consumption in 1956 as 51.82 million tons (on the basis of 13.71 ozs. per adult per day) and 52.01 million tons (on the basis of 14 ozs. per adult per day).

The Census Report for 1951, on the basis of similar figures has made some estimates of food requirements for the next three

decades. It observes that the utmost that our agricultural productivity may increase is by 33·1/3% over that obtaining in 1951. For this purpose, the total production of food and non-food crops is converted to a common denominator what is called 'annual tons of agricultural productivity' in terms of food-grains by taking the average productivity of all food-grains for the last 5 years for 78% of the total cultivated area in the country where food-grains are grown and applying the same rate to remaining 22% of the area. On this basis it is assumed that if food-grains were grown in all areas where commercial crops are grown, then India's agricultural productivity in terms of food-grains would work out at 70 millions of annual tons in 1951. It is then estimated that through all our efforts to step up production, we can increase this figure to only 85 million of annual tons in 1961 and a maximum of 94 millions of annual tons by 1969. Taking the average annual shortage of 34 lakh tons, the Report states that around 75 million annual tons of agricultural productivity are required in order to feed and clothe 336 million people at the current levels of consumption. At this rate, the need by way of agricultural productivity computed at 85 million tons in 1961 for the estimated population of 410 millions in 1961; 96 million annual tons for the estimated population of 460 million persons in 1971 and for the expected population of 520 million persons in 1981 it will be 108 million annual tons in 1981. The targets of development of agricultural productivity over 1951 being 15, 26 and 38 million annual tons. The increase in food production required over the 1951 production is of the order of 21% before 1961, 37% before 1971 and 54% before 1981.

To find out whether the food supply in India is adequate or not we must know accurately (a) the total quantity of food available for consumption and (b) actual diet requirements of the people. Food supply is a collection of different varieties of food available for consumption unit of population. As the food requirement of adults, young persons of males and females are different and the age structure and sex-ratio of a population differ at different points of time, it is necessary to translate the total consuming population into standard consumption units. Following Dr. Aykroyd¹ we shall take an adult male as the standard consumption unit and convert the total population into adult male equivalent at the rates of 1 female equal to 0·8 adult male and young person (a boy or a girl from 0 to 15 year) equal to 0·7 adult male. These co-efficients nearly conform to the Lusk's Co-efficients used by Dr. Mukerjee in calculating the total consumption

¹ P. Sen, *Food Problem in India*, p. 2.

units in India.¹ The following table gives the average and total man-value of India's population :—

Ages	Man value per head	Population in crores			Total Man Value in crores		
		1931	1941	1951	1931	1941	1951
(i) 0-15 years	0.7	14.12	15.52	13.38	9.88	10.86	9.36
(ii) Males 15 and upwards	1.0	10.92	13.03	11.12	10.92	13.03	11.12
(iii) Females 15 and upwards	0.83	10.26	10.35	10.38	8.52	8.59	8.61
Total	0.835	35.30	38.90	35.6	29.32	32.48	29.09

Having done this, we shall then calculate the total daily food supply per consumption unit, which must include all varieties of food available for consumption. The requirements of food-grains per adult per diet have been calculated (i) at 14 ozs. as suggested by the Nutrition Advisory Committee; (ii) at 16 ozs. recommended by Dr. Aykroyd and (iii) at 18 ozs. at recommended by the Advisory Board of I. C. A. R. and the adult equivalent of 86% of the population, fixed by (i) the Planning Commission and (ii) 83% as fixed by Dr. Mukerjee.

	Thousand tons
(1) Production of cereals, 1951	41,744
Production of cereals, 1954	56,130
(2) Quantity Available for consumption in 1951 allowing for seed, etc. at 12½%	36,519
Do in 1954	49,114
(3) Population in 1951 (million persons)	356.87
(a) Adults equivalent at 86%	306.87
(b) Adults equivalent @ 83%	296.17
(4) Population in 1954 (million persons)	369.65
(a) Adults equivalent at 86%	317.90
(b) Do 83%	306.80
(5) Requirements in 1951 on the basis of (i) 86% (ii) 83%	
Do 14 ozs. (000 tons)	43,753 42,512
Do 16 ozs. („)	50,004 48,585
Do 18 ozs. („)	56,254 54,658
(6) Requirements in 1954 on the basis of (i) 86% (ii) 83%	
Do 14 ozs. (000 tons)	45,183 43,743
Do 16 ozs. („)	51,638 49,911
Do 18 ozs. („)	58,092 56,241

¹ R. K. Mukerjee, *Food Planning for 400 Millions*, p. 23.

(7) Availability per adult per day in 1950 (ozs.)	13.71
Deficit compared to production at 1951 level 86%	83%
(a) at the rate of 14 ozs. per adult per day	7234 5939
(b) at the rate of 16 ozs. per adult per day	13485 12066
(c) at the rate of 18 ozs. per adult per day	19735 18139
(8) Availability per adult per day in 1954 (ozs.)	15.71
Deficit or surplus in 1954	
	at 86% at 83%
(a) at the rate of 14 ozs. per day per adult	3931 5371
(b) Do 16 ozs. Do	—2524 —877
(c) Do 18 ozs. Do	—8978 —7127

If we take the nutritional standard of 16 ozs. per head, we find that at the man-value of 83% these seems to be a deficit in the total production, *viz.*, of 877 thousand tons. Though the deficit is not sizeable, but it seems that the position is not going to improve to a considerable extent in the immediate future. We, however, cannot imagine of the nutritional standard of providing 18 ozs. per head in view of the present food production. Hence, we should be very cautious and careful in planning our future programmes about food supply.

Authorities like Kharegat, Dr. Aykroyd and Shri Anand have calculated that if every one is to get a balanced diet, the production must be increased in the following proportions¹ :—

Commodities	Kharegat's estimates	Dr. Aykroyd's estimates (In percentages)	Shri Anand's estimates
Cereals	20%	30%	27%
Pulses	20%	100%	50%
Oils and fats	25%		150%
Vegetables	100%	100%	100%
Fruits	50%	100%	100%
Milk	300%	300%	400%
Meat, Fish, etc.	300%	Several hundred per cent	360%

India suffers not only from 'physical hunger' but also from 'specific hunger.' Hence, the problem of food can be tackled on two fronts. Firstly, it requires that food production should be increased within the country itself with the help of technological advance and secondly, the quality of food intake should be improved. For this purpose I offer the following suggestions :—

1. The areas now devoted to inferior cereals should be devoted to more nutritive ones, and a wide variety of pulses

¹ Kharegat Memorandum on Agricultural Development ; *Commerce Annual*, 1949 ; *Studies in Agricultural Economics*, Vol I. (1954) p. 24.

and beans should be grown to provide adequate proteins in the diet.

2. Efforts should be made to reduce the intake of cereals by substitution thereof by green leafy vegetables and fresh and dried fruits—which are an important source of carotene. Mangoes, papaya, oranges, tomatoes, carrots and sweet potatoes should be taken in plenty.

3. An increased production of root vegetables which are rich in carbohydrates, alkali, vitamin C, and iron must also be pushed up.

4. Greater efforts should be made to increase the production of milk and milk products and their consumption, which are rich in proteins, vitamins A, B, B₂, C and D, calcium and phosphorus. This can be achieved by banning cow slaughter and feeding the cows well. With the present strength of milch cattle, milk production can be increased by 75%—30% by better breeding, 15% by better feeding, 15% by better management and 15% by disease control.

5. Eggs—which provide good protein, most of vitamins, calcium, phosphates and iron—should also be produced and consumed in large quantities.

6. Fish is a protective food rich in proteins, vitamins and inorganic elements, and therefore, scientific development of fisheries in inland water areas should also form a part of our increased production.

7. The diet in the wheat zones should be particularly enriched with fruits, leafy vegetables and root vegetables, while the diet of the people in the rice zones should be supplemented with wheat and milk, fish and eggs. The same should apply to tapioca and millet-eating zones.

8. One should eat only when it is absolutely necessary. Our catch-phrase should be "Eat only when you must". At Homes, Luncheons, Teas, Dinners, etc., must be put an end to at least till the food position is improved. In this connection leadership should come from the national leaders, legislators, social reformers, Government officials and teachers.

9. Fasting should become a normal feature of our life. The frequency of fast-keeping by persons belonging to different age groups should be like this :—

- | | | |
|-------------------------------------|-----|-----------------|
| 1. Elderly people (age 55 and over) | ... | 4 times a month |
| 2. Middle-aged men and women | | |
| (35 to 54) | ... | 2 " |
| 3. Young men and women (15 to | | |
| 34) | ... | 1 " |
| 4. Infants and children | | |
| (below 15) | ... | Nil |

10. Intensive cultivation of land should be resorted to with a view to increase food production. Yields can be increased by 30% by increased use of organic fertilisers, by 5 to 10% through improved variety of seeds and by 20% by the use of methods for prevention of damage to crops.

11. Crop-planning should be introduced simultaneously at national, state, district, subdivision and village levels. At each level a quota should be fixed according to agricultural conditions and units concerned must produce up to its quota. Such regional units as exceed their quota should be given encouragement in the form of extra-facilities in respect of improved varieties of seeds, manures, irrigation, marketing and credit facilities. Individual prizes should be given to the best growers in the form of cows, bullocks, agricultural tools and implements.

The implementation of these suggestions involves a long-term effort covering the whole field of agricultural and economic development. It presupposes an increase in the purchasing power of the masses, an all-round improvement in the standard of living, a change in food habits, limitation of expanding population, and an all-out drive to increase the production of protective foods. This will take some time to materialise. In the meantime the standard of diet can be affected by the use of 'supplementary foods'—such as those recommended by the All India Women's Food Councils—which are cheap but at the same time rich in nutritive content.

CHAPTER 13

HOLDINGS IN INDIA

Introduction

India is par excellence a land of small peasants. The unit of holdings is everywhere small and uneconomic. An agricultural holding usually consists of 5 to 8 strips of land scattered over a wide area. In many parts of the country, for instance, "toy holdings" a "miniature farms" of 1/160 acre or of 31½ sq. yards are not uncommon. In India the problem presents two distinct features. The first is that the holdings tend to be very small; and the second is that individual holdings tend to become broken up into a number of separate plots, often situated at a considerable distance from each other. The former tendency is designated as "subdivision of holdings" and the latter as "fragmentation of holdings." These tendencies have reached an intolerable point in the Konkan, Gujrat, West Deccan, Indo-Gangetic plain and other parts of the land. Fields measuring less than half an acre are to be found sub-divided into more than 20 separately owned plots, many of them of less than 1/8 of an acre.

Size of Holdings in India

Various surveys undertaken in the country show that the average size of holdings is very small in India. It was particularly brought out by the Agricultural Labour Enquiry Committee Report that the average size of holdings in India is only 7·5 acres. The average size of holdings vary from 5·3 acres in Assam, to 4·1 in Bihar, 9·7 in Bombay, 13·9 in M. P., 4·5 in Madras, 5·6 in Orissa, 11·8 in the Punjab, 5·3 in U. P. 4·7 in West Bengal, 14·1 in Hyderabad, 12·7 in M.B., 7·2 in Mysore, 15·4 in PEP&U, 16·9 in Rajasthan, 29·6 in Saurashtra, 2·4 in Travancore-Cochin, and 3·8 in Jammu and Kashmir.¹

It may here be pointed out that the preponderance of uneconomic holdings is not peculiar to India alone, e.g., in Japan also the small holder predominates—the average size being only 3 acres. There are nearly two million holders of less than 1½ acres and another about two million acres between 1½ and 2½ acres.² In China also large number of holdings are uneconomic. In the Balkans the problem is similar. For instance, in a village in south-eastern Bulgaria the nature of agricultural holdings is that 12·5% are below 2 hectares; 42·5% are below 5 hectares; 1·5% is between 7½

1 Agricultural Labour Enquiry Committee—*Report on Intensive Survey of Agricultural Labour*, Vol. I.

2 *World Agriculture*, p. 58.

and 10 hectares ; and only 10% is above 10 hectares¹ But the table turns when we compare our condition with the advanced countries of the west. The size of our holdings pale into insignificance when we compare with the average size of holdings in those countries. In U. S. A , the average size of holdings is 145 acres, in Denmark it is 40 acres, in Holland, 26 acres, in Sweden, 25 acres, in Germany 21.5 acres, in France 20.5 acres, in Britain 20 acres and in Belgium 14.5 acres respectively.²

The following table gives the distribution of holdings in size in different States :³

States	Less than 5		5 to 10 acres		10 to 15 acres	
	Area owned	Area under personal cultivation	Area owned	A.P.C.	Area owned	A.P.C.
	%	%	%	%	%	%
Andhra	66.8	67.3	16.0	15.9	6.7	6.7
Bombay	51.3	51.0	20.2	20.2	10.2	10.3
M. P.	59.4	60.7	18.9	18.5	8.4	8.2
Madras	67.6	68.4	17.4	17.2	6.5	6.4
Hyderabad	32.0	33.8	21.3	21.1	13.8	13.5
M. B.	45.6	46.4	22.6	22.7	12.1	12.0
Saurashtra	9.9	9.8	13.4	13.4	13.4	13.4
Ajmer	70.3	70.9	16.2	16.4	6.3	6.4
Bhopal	31.7	31.9	18.7	19.8	13.8	13.8
Kutch	20.5	20.8	21.7	20.8	12.8	13.4
Rajasthan	51.4	52.5	20.9	21.5	10.1	10.0
Travancore-Cochin	94.9	...	3.5	...	1.3	...

It will be observed from the above table that except Saurashtra, Kutch Bhopal, and Hyderabad, the unit of holdings below 5 acres are over 45 per cent of the total holdings.

The Progress of Sub-division

The progress of sub-division of holdings have been going on unmitigated for long in nearly all parts of India, as has been revealed by a number of personal enquiries, *e.g.*, according to H. Mann in Jategaon Badruk, the average holding was 40 acres in 1871, it was 14 acres between 1820-40 and only 7 acres by 1914-15 He further says that in the last 60 or 70 years the

1 Wariner, *Economics of Peasant Farming*, p. 6.

2 Government of India, *Agriculture in Brief*, 1956 p. 71.

3 *Second Five Year Plan*, 1956 pp. 213-220.

character of land has changed.¹ In the pre-British days and in the early days of the British rule, the holdings were usually more than 9 or 10 acres, while the holdings below 2 acres were hardly known. Now, the number of holdings is more than double, and 81 per cent of the holdings are under 10 acres, and 60% are less than five acres.¹ In Borsad Taluka, according to Shri A. D. Patel, within 20 years the total number of holdings increased by 79% but while the average holding was 7 acres in 1901, it was reduced to 3.8 acres in 1921.² Dr. Bhagat says that in Bhiwandi Taluka, the percentage of holdings below 5 acres increased from 49.7 in 1886 to 69.1 in 1937, while for holdings from 5 to 25, it decreased from 40.5 to 25.5 per cent during the same period.³

In South India, in Vadamalaipuram, according to M/s Thomas and Ramkrishnan, with a reduction in total area there has been a simultaneous increase in the number of holdings since 1916. The average holding is just half in size of what it was in 1916 The subdivision has gone farthest in the smaller holdings of one to ten acres.⁴ Similarly in the Gangaikondan village, there has been a reduction in the number of land holders, from 925 to 835 between 1916 and 1937.⁵

Of Bengal, the Floud Commission remarked that the percentage of families holding two acres or less is 41.9 and the percentage holding between 2 and 4 acres is 20.6 per cent.⁶

The Punjab Board of Economic Enquiry showed that the number of holdings below 3 acres increased from 43.4 per cent of the total holdings in 1928 to 48.8 per cent in 1939.⁷

In U. P. the figures calculated by Major Erskine in 1880, the U. P. Banking Enquiry Committee in 1929, and those arrived at by the U. P. Zamindari Abolition Committee in 1949 show that the process of diminution of the size of the average holding has been steadily growing.

Thus, almost all enquiries indicate that the process of diminution of the size of average holdings is growing at a rapid pace practically throughout the country. According to the Famine Enquiry Commission the Agrarian Reforms Committee and the Planning Commission this trend is present in almost all the States in varying degrees.

1 H. Mann, *Land and Labour in a Deccan Village*, Vol. I, p. 46.

2 A. D. Patel, *Indian Agricultural Economics*, 1937, p. 124 and 171.

3 M. G. Bhagat, *The Farmer, His Wealth and Welfare*, p. 93.

4 Thomas and Ramkrishnan, *Some South Indian Villages—A Resurvey*, p. 9.

5 *Ibid.*, p. 71-72.

6 *Report of the Bengal Land Revenue Commission*, Vol. I, p. 86 and Vol. II, p. 30.

7 *Report of the Famine Enquiry Commission*, 1945, p. 256.

Fragmentation of Holdings

The problem of uneconomic holdings is further complicated by the practice of fragmentation of holdings. Thus if a father has four sons and he dies leaving four isolated fields of one acre each, the sons will not take one field each but one-fourth of each field, so that each field will be divided into four equal parts. This happens specially when lands are of different qualities and are situated in different localities. Fragmentation is accentuated by the expansion of cultivation irregularly over the waste, by purchase and sales and by extinction of families in default of direct heirs and the division of their property amongst a large number of distant relatives.¹

(As a result of fragmentation, the holdings of an agriculturist do not consist of a single compact block of land but of a number of small scattered plots over different parts of the village, often of a very irregular shape, e.g., according to Dr. Mukerjee, a holding of 9 bighas and 2 biswas was divided into 11 plots in Mahera village. "Another holding with an area of 33 bighas and 14 biswas was divided into 25 plots; a holding of 4 bighas 6 biswas into 10 plots, a holding of 4 bighas 5 biswas into 10 plots and another of 8 bighas 19 biswas into 16 plots and so on." In Nonapur village, the total holding of 0.18 acres was divided into three plots of 0.6 acres each, and these plots were further subdivided into smaller plots of land.² In Chach, "land is often divided into strips which are sometimes half a mile long and only twenty or thirty yards wide and each strip has a large number of holders."³ In the district of Dacca, the average size of plots is 0.55 acres, varying from 0.36 acre in the Thana of Harirampur to 0.19 acre in Kapasia Thana.⁴ In Punjab village, lands were divided into 1,898 fields averaging 1/5th of an acre, and 2,890 holdings has each over three fields. In another village, 12,800 acres were found to be scattered in 68,000 fields.⁵ The average size of holdings in some districts of Bihar was found to vary between 0.28 acres and 0.81 acres at the last settlement. In the Chattisgarh division of M. P., it was common to find an average holding of 10 to 12 acres scattered all over the village in no less than 30 to 40 plots of land.⁶ Mr. Keatinge mentions one extreme case where a holding of 2½ gunthas was partitioned among five brothers so that each brother got holding of half a guntha, and each of the five brothers cultivated each of

1 *Royal Commission Report on Agriculture.*

2 R. K. Mukerjee, *Fields and Farmers of Oudh.*

3 U. P. *Zamindari Abolition Committee Report.* p. 17.

4 M. Darling, *Punjab Peasant in Prosperity and Debt*, p. 84.

5 K. B. Shah, *Economics of Rural Bengal*, p. 123.

6 *Survey of Behrampur Village*, the Board of Economic Enquiry, Panjab.

7 *Manual of Instruction on Consolidation of Holdings in C. P.*

these five holdings in rotation.¹ In the Atgam village of South Gujarat it was found that on the average there are about 6 fragments of each holding.² In Madras in one village it was found that 170 ryots had 1,027 separate plots (1,658·10 acres) scattered in different places in five revenue divisions each holding averaging 6 plots.³ According to Dr. Mukerjee, in Bengal there are many holdings of only 2 cottas or 0·4 acres.⁴

The practice of fragmentation of agricultural holdings is not peculiar to India alone but it occurs in European as well as Asiatic countries too. This evil prevails in France, Switzerland, Germany, Bulgaria, China and Japan. A Chinese farm does not normally lie in a compact block but it consists of anything from 5 to 40 scattered squares, oblongs, strips, wedges and corners of land scattered over hedges, fields and sometimes at a distance of more than a mile from each other.⁵ The reasons given for this arrangement by the peasants in China are the same as those given in the past by the peasants in Europe.

(Disadvantages of Subdivision and Fragmentation)

(i) *Leads to Poverty.* The fragmented and uneconomic holdings have brought about progressive agricultural deterioration and aggravated the poverty of the masses. Increasing indebtedness has accelerated the process of expropriation of land by non-agriculturists, and has encouraged the agricultural proletariat burdening the land.

(ii) *Waste of Land.* The cultivation of an unduly small holdings entails waste in a variety of ways. This practice involves encroachment on the soil otherwise available for cultivation. It entails waste of land in boundary, hedges and pathways, e.g., it has been calculated that in the Punjab 6 per cent of the land is wasted as it is in fragments too tiny to be cultivated, and 10 per cent is lost to cultivation in boundaries to demarcate holdings.

(iii) *Makes Agriculture costly.* Sub-division progressively reduces the average size of holdings. When the holdings get smaller the proportion of fixed costs to the total costs of cultivation increases. Some of the costs incurred by the farmer such as expenses of maintaining his family, a pair of bullocks and a few agricultural implements do not decrease proportionately when his holdings get smaller.

1 Keatinge, *Agricultural Progress in Western India*, p. 17.

2 G. C. Mukhtyar, *Life and Labour in a South Gujarat Village*, p. 114.

3 Thomas and Ramkrishnan, *Op. Cit.*, p. 340.

4 R. K. Mukerjee, *Rural Economy of India*, p. 51.

5 R. H. Tawney, *Land and Labour in China*, p. 39.

(iv) *Raises cost of fencing etc.* Sub-division means also a rise in the variable costs. The costs of fencing per acre, of manure and seed, are all higher when the farmer cultivates a small rather than a big holding, in which case fencing may not be done to the fields leading to damage by stray cattle from the neighbouring fallow fields.

(v) *Improved machinery cannot be used.* Neither the improved implements nor the permanent improvement of any sort on land can be made because of the tiny size of the holdings. The farmer cannot afford to use upto-date machinery and tools. He cannot even dig a well on the field because it is not worthwhile to sink a well on a field which is just a fragment. In fact, agricultural inefficiency in India is largely due to this defect. }

Dr. Mukerjee is right when he says that "in many tracts the inefficiency of agriculture is due more to the small size and scattered nature of the holdings than to ignorance or want of alertness on the part of the peasants. Such holdings do not afford sufficient work for the cultivator and leave him almost unemployed during most part of the year. Agricultural indebtedness is at once the cause and effect of the excessive division of holdings, and very often enforced idleness and indebtedness go together."¹

(vi) *Personal supervision rendered difficult.* When holdings are intensely fragmented, much time is naturally lost in moving from one plot to another, particularly at the time of sowing, watering, weeding and harvesting. Personal supervision is rendered difficult because unless the plot is large enough it does not pay to erect platforms to keep an eye on the standing crops. Further, if the family is small, the owner has to content himself with a morning and evening visit to his various fields leaving the rest to chance. Carriage of manure is easier and more economical if the land is in one block and so it is usual to manure the plots which lie near the heaps. Mr. B. P. Misra has estimated that the expenses of cultivation increase by 5.3% for every 500 meters of distance for manual labour and ploughing, from 20 to 25% for the transport of manure, and from 15 to 32% for transport of crops. The net yield, therefore, decreases with every increase in the distance from the village.

(vii) *Provision of surface drainage difficult.* Fragmentation creates difficulties in maintaining correct levels and making provision for surface drainage. When a landowner holds his land in scattered bits he has naturally less incentive to spend money on the maintenance of proper drains to prevent waterlogging and on the construction of embankments to check soil erosion.

¹ R. K. Mukerjee, *Op. Cit.*, p. 63.

(viii) *Impracticability of Irrigation*, When land is excessively fragmented, irrigation often becomes impracticable, although sufficient water may be available. Water cannot be supplied so as to reach all the little parcels into which an individual holding may be cut, and besides this there is the difficulty of taking the water by channels which will have to run through other people's fields. The difficulties over the channel along which water is to be taken as well as over its distribution leads to much bickering and bad blood.

(ix) Fragmentation also brings in its train the invariable crop of disputes regarding boundaries, rights of way, etc., leading the farmer into expensive litigation.

Dr. Mann sums up the position thus, "It has, in fact, all the evils of very small holdings in that it prevents the use of machinery and labour-saving devices ; and on the other hand, of large holdings in that it hinders the adoption of really intensive cultivation by hand labour which is the great advantage of the small holder. Difficulties in connection with putting up fences, protection from the invasion of weeds from neighbouring fields, protection from stray cattle and from the depredations of thieves are common to excessive sub-division and fragmentation."¹ The combined result of this is to drive the land out of cultivation. This destroys enterprise, results in an enormous wastage of labour, leads to a very large loss of land owing to boundaries makes it impossible to cultivate holdings as intensively as would otherwise be possible, and prevents the possibility of introducing the outsiders with more money, as tenant farmers or as purchasers of a good agricultural property.²

Advantages of Subdivision and Fragmentation of Holdings

(i) *Leads to economic use of time and labour*. It must not be supposed that all cases of fragmentation are undesirable. The lack of a holding in a compact block may be due to perfectly sound economic consideration. By having their holdings scattered in different parts of the village the farmers are able to take advantage of different soil conditions, and it facilitates the distribution of work on the fields, for it may and it does happen that when it rains in one part of the village, the field in another part, where it may not rain, can either be ploughed or prepared for sowing the seed. It thus enables him to make a more effective use of his time and labour and of his bullocks.³

¹ H. Mann, *Op. Cit*, p. 48.

² *Ibid.*, p. 154.

³ J. B. Shukla, *Land and Labour in a Gujarat Taluka*, p. 106.

(ii) *Removes vagaries of famines and failure of crops.* This process of fragmentation ensures that every holder has share of all qualities of the soil, which in a system of subsistence farming is a matter of some importance, since it enables him to grow all the various crops which he requires for his own and his family's food, and also acts as an insurance against the total failure of crops which might occur if they were grown in a compact area.¹ Dr. Mukerjee holds the same opinion when he says that, "In many parts of India we find that two crops are grown in dispersed fields in different soil areas, so that, while a deficiency or an irregular distribution of rainfall may destroy one crop, there may be favourable returns from the other fields. Indeed, the elaborate system of rotation of crops which distinguishes the Indian from Western farming has been possible chiefly because the holdings are dispersed." On account of variety of crops also there is occupation for the cultivator for more days in the year than may be possible on a compact homogeneous block.

(iii) *Prevents division of society.* The subdivision of holdings prevents the division of society into two antagonistic classes, i.e., a class of big landlords and a class of landless agricultural labourers. It ensures a certain degree of economic equality and helps to create a class of peasant proprietors who have a stake in the land and are firmly attached to the soil

To a certain extent the subdivision of holdings may be a necessary evil in view of the peculiar condition of our country.

Causes of Subdivision and Fragmentation

(i) *Excessive Pressure of Population on Land.* Various causes have been put forward to account for the evil consequences of the excessive subdivision and fragmentation of holdings. We have been told that increase of population in the country has resulted in an excessive subdivision and fragmentation of holdings, for in the words of Floud Commission, "As population increases the available supply of land per head of the population decreases." It has also been maintained that it is the subdivision and fragmentation of land that have indirectly contributed to a rapidly increasing population . . . It must be borne in mind that abnormally small holdings which yield to cultivators a bare minimum subsistence may lead to reckless multiplication; where men have nothing much to lose by adding to the number of children, the tendency to multiply gets emphasised. Where the decencies of life are lacking, the moral and prudential restraints to marriage and multiplication are also lacking.² When the pressure on land

¹ R. G. Allen, *Social Service in India*, p. 133.

² Wadia and Joshi, *Wealth of India*, p. 244.

tends to increase, the income per head in the family tends to decline. The fall in income leads to bickerings in the family and the partition of the property. When partition takes place excessive fragmentation is the result—each claimant secures a fraction of every plot of land.

(ii) *Laws of Inheritance and Succession.* This process of subdivision and fragmentation is helped by the operation of the Laws of Succession and Inheritance. As Dr. Mukerjee observes, "Indeed, the tendency towards subdivision, which has been manifest in India during the last few decades only, has been the outcome of the interpretation of Hindu and Mohammadan Laws by English judges, with their strong predilection of individual succession to, and private enjoyment of, rights in land."¹ At the time of succession every son insists on getting a piece of every kind of land. In the words of Mr. Clow, "Everything is divided—shares, holdings, plots, tenant's houses, groves, ponds, and even trees. And where there is no formal partition there is always an informal one." When once it is decided to partition property, the desire to ensure perfect equality of shares leads to fragmentation. They will go even so far as to fight over the partition of honey on the branch of a tree ; they have been known to fight over the partition of the shade of a tree, not its fruits, nor its branches.²

But Messrs. Wadia and Joshi are of the opinion that the laws were in existence for centuries ; and their operation in the past did not lead to the subdivision of holdings. The problem of subdivision and fragmentation has only arisen and attracted attention during the last four or five decades, and today it is said to have become acute . . . it is undoubtedly true that the laws of inheritance and succession have accentuated the process of subdivision and fragmentation. But there are deeper causes that underlie this process.³ Instead of saying that these laws are the cause of subdivision and fragmentation, it would perhaps be more accurate to call them the 'instruments or the means' by which continuous subdivision is effected.

(iii) *The Absence of the Alternative Sources of Employment.* In a country which presents very few openings to absorb the surplus population, ancestral land is taken to be the sure basis on which to work and devote one's energy to eke out a living that would anyhow manage to keep the body and soul together. The absence of alternative sources of employment is the chief cause of subdivision and fragmentation because with the decay of

¹ R. K. Mukerjee : *Land Problems of India*, p. 55.

² Quoted by Jathar & Beri in *Indian Economics*, Vol. I, p. 186.

³ Wadia & Joshi, *Op. Cit.*, p. 244.

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cottage industries, artisans had to fall back upon land because there were no factories to absorb them. This led to further increase of pressure on land and subdivision and fragmentation of holdings. No systematic attempt was made to meet the evils and mitigate the distress of the transition period; none to revive the arts and crafts and adjust them to the new conditions of life. The craftsmen, the weavers, and the artisans fell back on agriculture, thus increasing enormously the pressure on land, which could only be removed by a process of subdivision, accentuated from one generation to another.¹

(iv) Finally, the village money-lender also plays a part in aggravating the evil. "In addition to the Laws of Inheritance, unequal fertility and assessment, another cause which contributes to this state of affairs is the absorption of large amounts of land into the hands of the village sowkar by means of foreclosure of mortgages or sales. The agricultural population in consequence has only a limited area to divide among themselves, so far as the occupation of the land is concerned."²

Economic Holding

The question that naturally arises when we consider the trends towards increasing subdivision and fragmentation of holdings is what would be the minimum size of an agricultural holding which can support a family of 5 members.

The size of an agricultural holding in any country depends on geographical and climatic conditions, partly upon the laws and social institutions, partly upon the methods and technique of cultivation. The ideal size of the holdings will vary likewise with the nature of the crop, and the objective behind the agricultural production, *i.e.*, whether agriculture is carried on primarily with the aim of satisfying the food and other demands of the population within the country, or whether cash crops are being raised for an export market. Thus where grain and food are in demand, the large holdings alone can be regarded as economic. Small farms, on the other hand, are best suited for dairy produce, vegetable and fruit growing or for vine orchards. According to Carver to be most profitable a farm devoted to the cultivation of wheat must be at least 160 acres, but this is obviously an impossible ideal in the Punjab or in Madras. Thus the question whether a holding is economic or uneconomic cannot be settled in a rigid manner.

¹ Wadia & Joshi, *Op. Cit.*, pp. 245-46.

² *Report of the Pardi Taluka Economic Enquiry Committee*, 1926, p. 16.

Various authoritative bodies have from time to time attempted to define an economic holding. Keatinge defines an economic holding as "a holding which allows a man a chance of producing to support himself and his family in reasonable comfort after paying his necessary expenses." According to him an economic holding in Deccan would consist of 40 or 50 acres of fair land in one block with at least one good irrigation well, and a house situated on the holding¹ Dr. Mann referring to the Deccan villages observes, "An economic holding is one which will provide an average family at the minimum standard of life considered satisfactory . . . the size of such a holding would be 20 acres."² The Baroda Economic Enquiry Committee fixed something between 30 and 50 bighas as the area of an economic holding. Dr. E. D. Lucas in his economic survey of the village of Bairampur came to the conclusion that 14 acres cannot support a Jat and his family of five without obliging them to incur debt. Darling held that in the Punjab 8 or 10 acres cannot maintain a cultivator in minimum comfort without income from some other source. It is estimated that a tenant in the Punjab who cultivates on the batai system would require 10 or 12 acres for the maintenance of an average-sized family.³ Stanley Jevons was of the opinion that for giving a family a reasonable standard of life 20 to 30 acres were necessary. Similarly the U. P. Congress Agrarian Committee said, "We believe that in the present state of low prices, an economic holding should be between 15 to 20 acres. If the prices are reasonably high and the rent is not excessive and there are better facilities for agriculture, improved cultivation and marketing, we believe that an economic holding in U. P. can be reduced to a lower figure."⁴ Again, the Floud Commission pointed out that in Bengal 2½ acres must be considered an economic holding in Tippera district where land is very fertile and most of the land is double-cropped land, while 10 acres might be minimum for the western Bengal where land is less fertile. On the other hand, Sir T. Vijayraghacharya regards 4 to 6 acres as 'minimum subsistence family holding,' although differences in soil, productivity, water supply, rotation and agricultural practice may alter the size of the holding.⁵ The most general view is to regard a holding of 5 acres as the minimum subsistence family holding below which the farm should not fall, if the farmers are to maintain a reasonable standard of life.

On the subject of economic holdings, the 1931 Census Report

1 Keatinge, *Rural Economy in Bombay Deccan*, pp. 52-53.

2 H. Mann, *Land & Labour in a Deccan Village*, Vol. II, p. 43.

3 Darling, *Punjab Peasants in Prosperity and Debt*.

4 *Proceedings of the 2nd Conference of the Indian Society of Agricultural Economists*, p. 15 (1941).

5 *Congress Agrarian Reforms Committee Report*, pp. 36-37.

said, "The economic holding may be defined as the minimum area necessary for a cultivator from which he can support himself and his family. It must first be made plain that in such a discussion no great measure of precision is possible. The question whether any particular holding can or cannot support its owner and his family in the degree of comfort to which he is accustomed is always a question of fact, the answers to which vary, according to the circumstances of each particular case. It will depend on :—

1. The nature of the holding *e.g.*, a holding which is economic in Meerut with its ample sources of irrigation and fertile soil would certainly be uneconomic in Bundelkhand where cultivation is difficult and precarious.

2. The skill and industry of the cultivator—a Brahmin would starve on a holding that is more than sufficient to support a Koeri.

3. The standard of comfort to which the cultivator is accustomed. Three acres may be sufficient to a Chamar but be insufficient for a Rajput, and the standard of living of a landlord is higher in most cases than that of a tenant."¹

In the words of the same Report, "The point at which holding becomes uneconomic in size is not fixed but variable, but it is possible to work out a complete set of average or typical economic circumstances and to fix a point in relation to them." It is apparent that the phrase 'economic holding' in terms of a unit of land, which assures a reasonable standard of living to the farmer and his dependants, is subject to widely varying interpretation. A holding to be economic must provide a surplus on the ascertained cost of production, sufficient to provide security for lean years and for fluctuations in market prices and a fair standard of living for the farmer and his dependants and fair wages to agricultural labourers.

The Agrarian Reforms Committee has laid down three forms of the sizes of holdings² :—

- (i) An economic holding, determined according to the conditions of different regions, which must afford a reasonable standard of living to the cultivator and provide full employment to a family of normal size.

- (ii) A basic holding, below the economic size, *i.e.*, smaller than the economic holding to which the rehabilitation treatment may be applied, uneconomic in the sense of being unable to provide a reasonable standard of living to the cultivator, but not inefficient for the purposes of agricultural operations.

¹ *Census of India, 1931 for U. P. Vol. XVIII, Pt. I, p. 44.*

² *Agrarian Reforms Committee Report, pp. 21-22.*

(iii) An optimum holding, with a ceiling to the size looking to the managerial capacity and financial resources of an average cultivator in India. The optimum size of a holding should be, as a rule, not more than three times the size of the economic holdings. Exceptions are allowed in cases of joint families.

The Planning Commission in its First Five Year Plan, had evolved the concept of "family holding". A "family holding" may be considered from two aspects, *viz.*, (i) as an operational unit, and (ii) as an area of land which can yield a certain average income. The Commission defines the "family holding" as an area equivalent, according to local conditions and under existing conditions of technique, either to a plough unit or to a work unit for a family of average size working with the assistance of a pair of bullocks. It says that there should be an absolute limit to the amount of land which an individual may hold and accordingly it has recommended that the States should work out detailed plans for fixing ceilings on holdings, keeping in view the agrarian problems in their respective areas.

The imposition of ceiling has two aspects, *viz.*, (i) ceiling on future acquisition and (ii) ceiling on existing holdings. A ceiling on future acquisition exists in U.P. at 30 acres, in Delhi at 30 standard acres, in Bombay at 12 to 48 acres depending upon the class of land, in West Bengal at 25 acres, in Hyderabad at three family holdings, in Saurashtra at three economic holdings and in M. B. at 50 acres.¹

Ceiling on existing holdings has been fixed at 30 acres in U. P. in W. Bengal at 33 acres ; in Punjab at 30 standard acres (upto 60 ordinary acres) and in the case of displaced persons 50 acres (upto 100 ordinary acres) ; in Hyderabad at 3 to 4½ times the family holding, in Bihar at a maximum of 30 acres of wet land for a family of 5 members, with the provision for an additional 5 acres for every additional member, in H. P. at 30 acre of land in the district of Chamba and lands assessed for Rs. 125 or more in the rest of the State ; in Saurashtra at 3 economic holdings ; and in Delhi at 30 standard acres.²

According to the Planning Commission the following categories of farms should be exempted from fixing the ceiling :—

- (i) tea, coffee and rubber plantations,
- (ii) orchards where they constitute reasonably compact areas,
- (iii) specialised farms engaged in cattle breeding, dairying, wool raising, etc.

¹ *Second Five Year Plan*, p. 194.

² *India*, 1956, p. 165.

(iv) sugarcane farms operated by sugar factories, and
 (v) efficiently managed farms which consist of compact blocks on which heavy investments or permanent structural improvements have been made and whose break-up is likely to lead to a fall in production.

Measures for Consolidation

It would be a positive advantage to the peasant if instead of having widely scattered small plots of land, he had an equivalent compact block of land. Compactness of land brought about with the purpose of liquidating the scattered nature of plots is the remedy—consolidation of holdings. “It is a process,” says Strickland “whereby owners of rightholding tenants are persuaded or compelled to surrender their scattered plots and receive in their place an equal area of land of the same quality in one or two blocks. An exchange of this kind has in the past three centuries been carried out in all the countries of Europe.”¹

There are two methods of consolidation of holdings : (a) by voluntary co-operation between the cultivators themselves on the initiative of the persons belonging to that locality ; and (b) by compulsory methods adopted by the Government. In case of voluntary methods there is too much delay and the process is very slow, and in some cases the money-lenders and the zamindars have placed considerable hindrances in the way of consolidation work. But if compulsory consolidation is resorted to, the cultivator resents and feels hurt. Further if the administrative machinery is weak and inefficient, compulsory consolidation of holdings can create lots of difficulties.

Regarding the attempts at consolidation of holdings Dr. Darling says, “It is easy to chronicle the results but most difficult to produce them. Everyone has to be satisfied and all conflicting interests reconciled. The ignorant have to be enlightened and the stubborn conciliated. The poor, the weak and the speechless have to be as much regarded as the rich, the strong and the vocal. The only weapon is the tongue and the only means persuasion. Moreover, technical difficulties abound and underlying all is the peasant’s passionate love for his land with the jealousy of neighbours that passions breed. In such circumstances the work must be slow. The marvel is that it is done.”²

Consolidation in itself offers no permanent solution and the problem is likely to recur with every new generation. Restrictions

¹ G. F. Strickland, *Consolidation of Holdings*, p. 4.

² M. L. Darling, *Op. Cit.*

are, therefore, necessary on future partitions, exchanges or transfers. Legislation has, therefore, been undertaken in Bombay, Punjab, U. P. and Berar. The Bombay Prevention of Fragmentation and Consolidation of Holdings Act, 1947, makes it illegal to create a fragment of less than the standard size notified in a particular area. The East Punjab Holding Act, 1948, has enactments similar to those of the Bombay Act. In U. P. consolidation of holdings was tried under the Consolidation of Holdings Act, 1953. The U. P. Government has fixed a minimum of $6\frac{1}{2}$ acres as the limit, Hyderabad from 2 to 24 acres, Delhi 8 standard acres and M. B. and Bhopal each 15 acres, below which the land cannot be split. V. P. has prescribed as the minimum limit 5 acres for irrigated land and 10 acres for dry land.¹ In Bombay the Government have fixed minimum limits varying from 10 gunthas (one-fourth of an acre) to 6 acres in all the districts of the pre-merger Bombay states. Assam has put the minimum limit to 12 bighas.

Legislation on Consolidation

{The need for legislation for speeding up consolidation was felt early, the report of the Royal Commission on Agriculture drew attention to the need of undertaking surveys and checking further subdivision. Three stages may be marked in the history of legislation for consolidation. In the first stage legislation was permissive, as in the Baroda Act of 1920. In the second stage an element of compulsion, as in the C. P. Consolidation of Holdings Act, 1928, was introduced.} In the third stage a scheme of consolidation can be enforced in any given area without willingness of the holders of the locality, as in the Bombay Small Holdings Act, 1927.)

{Special legislation for consolidation has been passed by Bombay, M. P., Punjab, U. P., Pepsu, H. P., Jammu and Kashmir, and Delhi.} The legislation in M. P. and J. and K. permits the Government to exercise partial compulsion on a minority of landholders when a specified number of persons in an area expresses a desire for the consolidation of holdings. {In U. P., Bombay and PEPSU the legislation enables the State to undertake consolidation on its own initiative. Delhi has adopted the Punjab Act, while Orissa has incorporated special provisions in the Orissa Agricultural Lands Act, 1951. In the districts of Muzaaffarnagar and Sultanpur of U. P. a scheme of compulsory consolidation of scattered holdings has been put into operation at an estimated cost of about Rs. 20 crores, to be borne by the beneficiaries themselves. (This scheme is being extended to other parts of the State. Where consolidation has been actively undertaken, as in U. P. and the Punjab, it is handled by co-operative societies, while in Bombay, Pepsu, Delhi and to some extent in the Punjab consolidation schemes have been included in the States' Five Year

¹ *India*, 1956, p. 166.

Plans. Sub-letting has been prohibited in some States except in certain deserving cases. In many other states the Government has assumed the power to take over lands which remain uncultivated for more than a specified number of years and make arrangements for their cultivation.

The main provisions of these Acts relate, *inter alia*, to fixation of minimum standard area for regulating transfers, prohibition of fragmentation below standard area, schemes of consolidation by exchange of holdings, reservation of areas for common purposes, procedure for payment of compensation to persons allotted holdings of less market value than their original holdings, prescription of rights of persons in the new holdings and administrative machinery.¹

Difficulties in the Work of Consolidation of Holdings

Various difficulties confront the work of consolidation, some of which are psychological, while others are of a practical nature. These difficulties are :—

(i) In many areas there is a lack of proper records about rights of lands, *e.g.*, in the Punjab, difficulties have been experienced due to loss of revenue records during the disturbances of 1947.

(ii) The work of consolidation is of a technical nature which requires experience of survey and settlement work, knowledge about soil classifications, land tenure system and methods of land evaluation. This requires the employment of trained personnel. But unfortunately the numbers of such personnel is very small. Though of late efforts have been made to give training to the officers in some states.

(iii) The work is also hampered due to the conservative attitude of the cultivators and his love for land. The zamindars and other unsocial elements have also put obstacles in the path of consolidation.

(iv) Consolidation costs money and the difficulty of finding finances discourages the smooth working. Hence, there are three different kinds of arrangements for meeting the cost of consolidation : (i) In Delhi, M. P. and Punjab part of the cost is recovered from the cultivator in the shape of fees of consolidation. In the Delhi, M. P. and Punjab the cost of consolidation per acre came to Rs. 4-6-0, Rs. 4-4-0, and Rs. 1-5-0 respectively and the cultivator was charged a consolidation fee of Rs. 3-12-0, Rs. 4-0-0 and Rs. 0-12-0 respectively, (ii) the cost may be met entirely by the Government as in Bombay, where as a concession to the cultivator

¹ I. L. O., *Recent Developments in Certain Aspects of Indian Economy*, I, 1956, p. 30.

the work is done free of cost ; and (iii) as in U. P. where the entire cost is to be recovered from the cultivator at the rate of Rs. 4-0-0 per acre.

Progress of Consolidation

The progress of consolidation in India in different States has been rather slow and only a few States such as the Punjab, Bombay, U. P., Pepsu, M. P. and Delhi have made some headway with the work of consolidation. In the Punjab the work of consolidation was begun in 1920 on co-operative lines but subsequently its scope was extended. By the end of March 1955, in Punjab over 4 million acres of land had been consolidated, in M. P. 2.5 million acres and in Pepsu, over a million acres. In Bombay and Delhi 1060 and 210 villages respectively had been consolidated. In U. P. the work of consolidation was taken up in hand by the co-operative societies since 1924. They have consolidated nearly 6 lakh acres in the Districts of Ballia, Bijnor, Basti, Baharaich, Allahabad, Saharanpur, Sitapur, Gorakhpur, and Deoria.

Thus, while there is growing interest in almost all States in programmes of consolidations of holdings, much more needs to be done. In national extension and community project areas consolidation of holdings should be undertaken as a task of primary importance in the agricultural programme. The plans of several States for the Second Five Year Plan include provisions for consolidation of holdings.

Consolidation of Holdings through the Co-operative Societies

Apart from compulsion, the best instrument for securing the consolidation of holdings seems to be the co-operative society for the consolidation of holdings. The main merit of these societies is that it is voluntary, that it rests upon the education of the public opinion in favour of consolidation and upon the persuasion of the landholders concerned. Once the voluntary agreement is sponsored by the co-operative consolidation of holding society, the results are permanent as the landholders once they realised the evils of fragmentation are not to allow its re-emergence after some time. But the greatest difficulty in co-operative methods is that it is slow, the work of consolidation in a given area might be held up if a small and obstinate minority refuses to agree to any scheme of re-allotment of lands. Other hindrances to consolidation through co-operative societies are the indebtedness of the ryot on large scale, the lethargic attitude of the people, sentimental attachment to land, want of adequate areas of the same kind of land for exchange, lack of adequate and persistent propaganda and the lack of efficient staff to carry out the legislative measures.

In Delhi, there were 51 consolidation of holdings societies in 1953-54. They consolidated 49,249 acres of land in 62 villages.

In U. P., the number of societies for consolidation of holdings was 606 and they consolidated 35,423 acres, 106,817 plots were reduced to 9,139.

In Andhra, there were 10 societies for consolidation of holdings with 790 members. One society consolidated four small holdings into two plots measuring three acres, and the transaction benefited the members.

Advantages of Consolidation of Holdings

As a result of consolidation of holdings rents have risen, yield of crops has increased, new and waste lands have been cultivated, and wells have been dug to irrigate, waste of lands in hedges and boundary lines have been removed and consequently disputes and litigation have declined. The village records have been simplified and the cost of future settlements have been lessened, improvements in communication have taken place and the layout of the villages has been improved. "Besides being useful in reducing the number of fragments, the process of consolidation also provides an opportunity for the planning of village common lands, roads, drains, compost-pits, schools, playgrounds etc., in a systematic manner.

Consolidation of Holdings in the Foreign Countries

In countries like France, Belgium, Germany, Switzerland, Denmark, Holland and Japan and Russia, the State has intervened with compulsory legislation regarding the consolidation of holdings. All these countries have solved this problem through a number of remedial measures partly by the purchase of small parcels to round off their own holdings by the peasants, partly by limiting the size of an average family through birth control and partly by legislation. A study of the movement of consolidation of holdings in these countries brings out many interesting points of similarity in their efforts and experiences as given below :—

Firstly, all of them found that the improvement of agriculture was hampered by fractionalisation of holdings and therefore, consolidation formed an important link in any scheme of agricultural development.

Secondly, all of them had to take administrative and legislative action for restripping because private agreements at consolidation without the force of law failed.

Thirdly, to carry on the work of improvement consistently and steadily, specially trained staff had to be engaged resulting in a large expenditure.

Fourthly, the governments had to give liberal grants to meet the cost of restripping.

Fifthly, an adequate financial help had also to be given to enable the farmers to improve their methods and technique of cultivation.

Sixthly, the legislation has been adopted in a number of countries and embodied in these principles: (i) Compulsory expropriation of existing holders, (ii) compulsory reconstituting of holdings at the instance of a certain proportion of land holders or in some cases without it, (iii) subsequent indivisibility of reconstituted holdings, (iv) exemption of holding from seizure for debts, and (v) prevention of reconstituted holdings from being combined with other holdings.

Co-operative Village Management

Consolidation of holdings does not promise to give the cultivator an economic holding. If the cultivator has a small area of land scattered in different parts of the village consolidation will bring the land together but it cannot possibly increase the size. In order, therefore, to provide economic holding for each cultivator a much bigger effort will be required as is envisaged in the First and Second Five Year Plans under the Co-operative Village Development.

According to the Planning Commission the village should be made the primary unit of management in agriculture. The primary object of village management is to ensure that the land and other resources of a village can be organised and developed from the standpoint of the village community through the agency of village panchayats, gaon sabhas or some other similar organisation of the people in the village. During the transition to co-operative village management lands in the village will be managed in three different ways: Firstly, there will be the individual farmers cultivating their own holdings. Secondly, there will be groups of farmers who pool their lands voluntarily in their own interest into co-operative working units. Thirdly, there will be some land—such as common lands of the village, or the lands available for the settlement of the landless—belonging to the village community as a whole.

The main instruments for achieving co-operative village management are :

- (i) The national extension service and programmes for increasing agricultural production and developing other allied activities,
- (ii) the village panchayat and the functions assigned to it as the

development agency at the village level, (iii) steps taken to develop co-operative credit, marketing, warehousing, processing, etc., (iv) programmes for the development of village industries, (v) programmes for promoting and assisting voluntary co-operative farming societies, and (vi) the development of the community sector within the village economy.

Census of Holdings

The census of land holding and cultivation has been carried out in 22 States. In 10 States it has been based on complete enumeration of all holdings, *viz.*, Andhra, Bombay, M. P., Madras, Hyderabad, M. B., Saurashtra, Ajmer, Bhopal and Cutch. In 7 States the census has been based on complete enumeration but was restricted to holdings of 10 acres, *viz.*, Punjab, PEPSU, Goorg, Mysore, H. P. and V. P. In U. P. the sample survey has been carried out. While in Bihar, Rajasthan, Orissa and Travancore-Cochin, sample surveys have also been undertaken, in Assam and West Bengal the State Governments had earlier collected some data regarding land holdings.

The data collected relate to the size and distribution of (a) holdings classified according to area owned, and (b) holdings classified according to area under personal cultivation.

CHAPTER 14

CO-OPERATIVE AND MECHANISED FARMING IN INDIA

1. Co-operative Farming

Co-operative farming stands for an arrangement "where each cultivator would retain his right in his own land, but cultivation operations would be carried on jointly. The expenditure would be met from a common fund and deducted from the gross income. The net income would be distributed among the cultivators in the proportion of the land belonging to each."

The main features of co-operative farming are : (i) that land is formed into a single unit, (ii) proprietorship rests with the individuals, (iii) management is carried on jointly, (iv) the members are paid for their work, and (v) the net profits are distributed among the members after withholding something for building up reserves.

Co-operative farming has been popular in Palestine and China but in India it is as yet in infancy. The main purpose of such type of farming is to develop the fallow land, rehabilitate the displaced and landless persons, unemployed, and to secure economy in the use of machinery, and to secure the advantages of large-scale farming. The societies formed for co-operative farming get State assistance in the form of lower assessment, loans for the purchase of seeds, supply of manure and other implements at concessional rates, contribution towards share capital without sharing in profits. The money contributed towards share capital along with interest is repayable in instalments.

Kinds of Co-operative Farming

The co-operative farming societies have been classified into four kinds :

(i) *Co-operative Better Farming Society*. A co-operative better farming society is organised with a view to introduce improved methods of agriculture. It encourages the use of improved seeds, implements and manures and is permitted to undertake bunding, irrigation, joint harvest and marketing of produce. In this system each member is independent for the cultivation of his land except for the specific purpose for which he joins the society. In this form the agricultural land is not pooled.

(ii) *Co-operative Joint Farming Society.* Under this type the land belonging to the members is pooled in one unit but proprietorship rests with the individual members. Members work on the pooled land accordance with the decisions of the Committee elected and the manager appointed by it. They work jointly and each member gets wages for his daily labour. The ownership of each member in the holding continues. The produce is jointly disposed of and the proceeds after meeting all the expenses of cultivation are shared by the members in proportion to the wages earned by them. The objects of this type of society are : (i) to purchase, or take on lease lands for cultivation, (ii) to purchase, erect and repair residential buildings, cattle-sheds, godowns to facilitate joint farming, (iii) to purchase farming requirements, to sell and process the farm produce, (iv) to raise funds on the security of lands, crops and other assets for the improvement, purchase of machinery and to make loans to the members for agricultural operations, (v) to undertake cattle breeding, dairy farming, vegetable growing and fruit gardening, (vi) to promote the development of agriculture, self-help, thrift and co-operation among the members with particular application to farming, (vii) to arrange for expert advice and spread of agricultural education among the members of the society. This type of society is particularly suited for solving the problem of fragmentation and sub-division of holdings.

(iii) *Co-operative Tenant Farming Society.* Such society is organised where large areas of land are available on lease from landlords or the Government. If the society owns land on free-hold or lease-hold, but its holding is divided into smaller holdings or plots, each of which is leased to individual tenant, who is a member of the society for cultivation, then it is called a co-operative tenant farming society. Every member agrees to cultivate the lands allotted to him as a tenant member in accordance with a plan laid down by the society in payment of fixed rent for his holdings and to give his contribution by way of labour or otherwise to the scheme of land improvement and reclamation in accordance with the rules and regulations prescribed by the society in this behalf. The main functions of the society are to (i) purchase or take on lease lands, (ii) arrange for joint purchase of farming requirements of members and joint processing and sale of farm produce, (iii) arrange for the supply of credit, seed, manure. Such type of society is generally suitable for the places where new land is to be brought under cultivation. This method is now being tried in India in the Ganga khadir and in Madras.

(iv) *Co-operative Collective Farming Society.* Such a society undertakes joint cultivation. Lands are cultivated jointly, and the produce is raised collectively and distributed among the workers in proportion of labour and other resources contributed by them.

The co-operative collective farming society has all the features of a joint co-operative farming society except that in the former, the lands belong to the society as freehold or leasehold, whereas in the latter, the lands are held by the members as owners or tenants. Such societies have not yet become popular in India.

Co-operative Farming in Foreign Countries

Joint farming has achieved varying degrees of success in different countries. Only where either special incentives existed among its sponsors or its development was actively favoured by the states, e.g., it was the religious creed of Hutterites or the sense of historic mission among the Jewish pioneers in Palestine that helped in knitting the groups close together and led to the success of co-operative settlements. In U.S.S.R. and Mexico it was the State policy that shaped the growth of collective or co-operative farming. In U.S.A., co-operative farms were organised by the Farms Security Administration to provide farmers and labourers with employment during the days of depression. Similarly though joint farming societies in Hungary, Bulgaria, and Yugoslavia are voluntary associations of farmers, yet State policies have played a notable part in their organisation and method of working through official propaganda and pressure. In India too if co-operative farming is to take deep roots and achieve a substantial measure of growth, deep and abiding interest by the State and full measure of the co-operation of the people will be found essential.

Progress in India

Co-operative farming has not fully caught the imagination of tenants and land-owners. Consequently the progress is not much. The present position as regards the success of co-operative farming in different parts is given below :

Bombay. A regular and comprehensive scheme for the formation of co-operative farming societies was drawn up in 1949. Up to September 1954, as many as 267 co-operative farming societies came into being. They had a total membership of 9,432 and covered an area of 68,739 acres. Loans and subsidies to the extent of Rs. 8.3 lakhs and Rs. 6.76 lakhs were given to the societies for various purposes. Some of these societies have undertaken the cultivation of Government waste land and Mulki fallow lands after reclaiming them and making them fit for cultivation.

U. P. Co-operating Farming in U. P. was introduced in 1950-51 when two experimental farms were set up in the Jhansi district. Within a period of two years, 88 societies were organised in addition to 125 better farming societies under the Land Colonisation Scheme. The total area covered by them was 35,782 acres. The total working capital was Rs. 26.10 lakhs. The Government grant them financial help for the purchase of bullocks, construction of houses, etc.

In Punjab there were 216 joint farming societies at the end of 1953-54 with a membership of 3,060. They brought 44,062 acres of land under cultivation and account for agricultural production of the value of Rs 2.38 lakhs during this period. Their net profit amounted to Rs. 41 thousand. These societies spent large sums of money on purchasing of modern machinery and are now taking more and more to mechanised operations.

In Andhra tenant farming societies numbered 16 for the civilians with a membership of 2,128 of whom 1,823 were active colonists. These societies were assigned 7,082 acres of land of which 6,339 were reclaimed and brought under cultivation by 1953-54. Besides these there are seven land colonization societies formed for the settlement of ex-servicemen, consisting of 1,063 members. These societies were assigned 6,272 acres of land out of which 3,761 acres were reclaimed and 3,637 were brought under cultivation.

In Madras there were 24 land colonization societies for the civilians of which 22 societies cultivated Government lands while the other two cultivated private lands. 8,456 acres were assigned to them and of these 8,937 acres were reclaimed and made fit for cultivation. The Government granted loans and grants amounting to Rs. 26.3 and Rs. 21.4 thousands for the purchase of bullocks, implements and the reclamation of land.

In other States—except Delhi, Bhopal and Travancore-Cochin the progress has been very slow.

According to a recent survey, there are 1,247 co-operative farms working in India in different States distributed as follows: Bombay, 342; Punjab, 180; U. P., 163; Assam, 90; Rajasthan, 76; West Bengal, 76; Pepsu, 58; M. P. 90; and 173 in the remaining States of Andhra, Bihar, Delhi, Madras, Orissa, Kerala, Tripura and Himachal Pradesh.¹

Further Scope for the Progress

There is a big scope for Co-operative Farming in India. At a meeting held at Lucknow under the auspices of the F. A. O. in 1949, it was resolved that "Co-operative farming provides an ideal solution for the pooling of resources of the cultivators in land, labour and capital." The Co-operative Planning Committee also recommended the experiments in joint cultivation. The Committee writes: "We are of the opinion that the method, which has a fair prospect of success in this country, is one which combines the preservation of proprietary rights of the cultivators with co-operative farming." The First Indian Co-operative Congress, 1952, passed a resolution that "active and vigorous steps should be taken by the State and Co-operative Movement to organise co-operative

¹ A. I. C., C. *Economic Review*, June 1, 1957, p. 35.

farming societies wherever their formation is feasible and desirable". The Conference of the State Ministers of Agriculture and Co-operation, 1953, passed the following resolution :—

"The State should make arrangement for the selection of areas for starting co-operative farming societies and preference should be given to (a) areas where the development efforts of the Government are otherwise concentrated, (b) areas already initiated to some form of co-operative enterprise, (c) villages where small holdings predominate, and (d) newly reclaimed lands".

"There should not be an undue haste in forming such societies and unwilling cultivators should not be compelled to join co-operative farming societies as the movement is yet in its infancy. The aim should be to induce the farmers to join the societies willingly and in mutual interest."

The Planning Commission has also suggested some methods for popularising co-operative farming societies. The more important suggestions are given here :

(i) The area under a co-operative farming society should not be less than a prescribed minimum. This could be fixed according to circumstances from four to six times the family holding in an area. It is perhaps not necessary to prescribe a maximum for a co-operative farming society.

(ii) Preference should be given to co-operative farming societies in the matter of supply of finance, technical assistance and marketing

(iii) In undertaking consolidation proceedings, preference might be given to villages in which co-operative farming societies are formed.

(iv) Preference should be given to farming societies in leasing agricultural waste lands belonging to the Government or taken over from private owners with a view to development. Suitable assistance in bringing such lands under cultivation should also be given.

(v) It could be provided that so long as a co-operative farming society continues, no adverse tenancy right could accrue against those of its members who do not engage in personal cultivation. The object of this concession is not to affect in any way the rights of existing tenants but to encourage individual small owners to combine together to form co-operative farms.

Difficulties and Suggestions for Improvement

From the study of the working of various societies in the country it becomes evident that they all suffer from certain difficulties, which may be laid down below :—

(i) The first difficulty is regarding finance. The societies require short-term loans for day-to-day expenditure and long-term

finance for land improvements. Though the Government is giving generous help, still, if long-term loans, according to the requirements of the societies, are given, they can undertake many schemes of improvements.

(ii) Another difficulty is the absence of complete picture of the scheme of development and irrigation. There should be greater co-ordination between the working committees of the societies and the co-operative and agriculture departments.

(iii) The farmers are conservative and unless they are assured of the benefits of co-operative farming, they will not be ready for joint farming. Propaganda, various inducements, will be necessary. But the best way is to organise societies successfully so that they can see for themselves the benefits of the new methods of production.

(iv) The attachment to one's own land is very strong and question of measurement of quantity and quality of work of members is complicated. So, in the beginning in order to generate an atmosphere for co-operative farming, we should first organise better farming societies. It should leave the initiative to the cultivator for his individual cultivation. Attempts should be made to overcome the difficulties and privations and lack of facilities which he suffers because of his limited sources.

(v) Especially the collective societies experience the difficulty regarding the day-to-day distribution of work to each member of the society. The tempo and spirit for hard work should be maintained in co-operative farming. This, in a way, depends upon the distribution of work and skilful handling.

(vi) Another difficulty is whether co-operative farming should be introduced compulsorily or on a voluntary basis. The Congress Agrarian Committee favoured voluntary co-operation and also suggested that the method of compulsion should be resorted to if voluntary efforts should fail. If these societies are compulsorily formed the chances are that the members would not take any interest in their working and they would fail. In our opinion, therefore, compulsion may be used only when a majority of the farmers in a village are willing to form a co-operative farm but a small minority is unwilling to do so.

(vii) As co-operative farming becomes popular some agricultural labour will become unemployed as their farms will use more machinery than farms cultivated on a small scale by each cultivator separately. Therefore, in order to obtain a balanced economy of the farm and to provide full-time employment for the members, it is necessary to develop cottage industries and subsidiary occupations.

(viii) Another problem of worry is that of marketing. The co-operative farming societies have no facilities of ware-houses. All societies should pay more attention to ware-housing and marketing of agricultural produce.

2. Mechanised Farming

What it means ?

The term 'farm mechanisation' is used nowadays in very wide sense. It not only includes the use of machines for tillage operations, harvesting and threshing of the farm produce, but also includes power lifts for irrigation, trucks for haulage of farm produce, processing machines, dairy appliances for cream separating, butter making, oil pressing, cotton ginning, rice hauling, and even various electrical home appliances like radios, irons, washing machines, vacuum cleaners and hot plates.¹ Prof. Bhattacharjee opines that "mechanisation of agriculture and farming process connotes application of machine power to work on land usually performed by bullocks, horses, and other draught animals or by human labour."² Mechanisation of agriculture implies replacement of human and animal labour by machine power, in other words, displacement of labour by capital. Therefore, we can define "*mechanisation of agriculture as the process of performing certain agricultural operations which are usually done either by animals or man or by both with the help of suitable machines*". It chiefly consists in either to replace or assist or both, animal and human labour in farming by mechanical power, wherever possible.³ This necessarily means a change in the economic (organisational) and cost structure of farms, inasmuch as the ratio of capital to labour increases enormously and the proportion of different items of cost per unit of production undergoes a revolutionary change.

Types of Mechanisation

Mechanisation of land can be complete, it can also be partial. In Western countries notably in North American continent, mechanisation of agriculture is more or less complete. This has been necessary because of the shortage and high cost of farm labour. Complete mechanisation on a vast scale has been adopted in Russia as means to large-scale exploitation of land and increased production therefrom, in spite of the fact that before the Sovietization of Russia, the whole agricultural structure of the country was on the basis of peasant farming. During World War II the United Kingdom was forced on account of man power shortage to adopt

1 G. D. Agarwal, *Economics of Mechanisation of Agriculture in India*, Conference No. of Indian Journal of Agri. Econ., Vol. IV., No. 1 (1948), p. 91.

2 J. P. Bhattacharjee, *Mechanisation of Agriculture in India* in 9th Conference No. of I. J. Ag. Econ., p. 121.

3 *Ibid.*, V. V. Sayanna, *Mechanisation of Agriculture*, p. 158.

partial mechanisation on a large scale in order not only to keep up production, but also to expand production considerably in the few instances. Mechanisation has also been resorted to in Australia, Brazil and Canada where there is 'low pressure of population, scarcity of labour and high wage level.'

Broadly speaking, mechanisation of agriculture has two forms—mobile mechanisation and the stationary types of mechanisation. The former attempts to replace animal power on which agriculture of the world has been based for very many centuries; while the latter aims at reducing the drudgery of certain operations which have to be performed either by human labour or by a combined effort of human beings and animals.

Types of Farm Machines

Inventions of new machines is widening their scope to operations which hitherto could be performed by hand or manual labour only. The new trend in manufacturing tractors and agricultural machines is to make them more adaptable in small farms and convenient for small pockets. Their efficiency is increasing resulting in greater economies in operation and saving of money in comparison to manual labour. Some of the more used agricultural machines are :—

(i) '*Tractor*' ploughing dispenses with the wooden plough of yore and the need for draught animals for cultivation of land

(ii) '*The combined drill*' performs both sets of operations of sowing the seeds and putting the fertiliser simultaneously.

(iii) '*The combined harvester*' simplifies the work of reaping and threshing into a joint process and renders obsolete the use of sickle, the pitchfork and the scoopshovel

(iv) '*Potato harvester*' digs, gathers, grades, sacks, weighs and delivers the potato to a waiting truck with an estimated saving of 50 dollars a day or more over the old way of handling the crop.

(v) '*The experimental planter*' opens the bed, plants the seeds and places the fertiliser all at one time. This considerably saves the quantity of fertiliser.

(vi) '*The cotton picker*' extracts lint-cotton from the open balls.

(vii) '*The sugarcane harvester*' cuts the cane and loads it at a speed of 7 to 8 miles an hour with an estimated saving of $\frac{1}{2}$ to $\frac{1}{4}$ of the hand harvest labour.

Thus plant setting, vegetable and small fruit production, hedge demolition and drainage operations, tractor spraying of the insecticides, cotton picking and even some of the household

work of the farmer's families have been increasingly machanised in the west. The lorries and the railways, the system of elevators and conveyors have come into general use for transport, marketing and storage of farm products and livestock. Thus in modern agriculture machines are being increasingly employed in one way or another in almost all farming operations ranging from breaking up the soil to the marketing and the sale of the produce of the farm. This is made possible largely due to extension of electricity in the countryside, manufacture of agricultural machinery suitable to farms in varying climatic and geographic circumstances and the dispersion of instructions in technical and rural engineering at the agricultural schools. Electricity is used for working of such machines as feed grinders, ensilage cutters, seed cleaning machinery and milking machines and also to furnish lights and power in the farm-households and in the farm buildings.

Power Requirements of the Farm

Laying down the criterion for the use of machines in agriculture Danson remarks that, "in countries where machines are cheap, while labour is expensive, and moreover, of a type qualified to understand and care for them, a free use of machines is indicated, and the introduction of labour-saving implements will generally result in a direct saving of outlay; even if it does not, the additional expense is so small and the need of economy in labour so great that its use is economical." If we apply this criterion to India we find the machines are expensive as they are not manufactured in the country; fuel is costly; labour is cheap and unskilful in the use and care of machines. It follows that the extent to which the labour-saving device is an economy it is much more limited here than in U. S. A. or other Western countries.

However, there can be no two opinions on the urgency of mechanical help for increasing production where it creates further employment or does not compete with the bullock and human labour. Power is required on the farm for performing two kinds of jobs: (i) First, tractive work requiring pulling or drawing efforts such as ploughing and land preparation, seeding inter-culture, harvesting, etc., and also hauling. (ii) Second, stationary work such as water-lifting, threshing, sugarcane crushing and other jobs of like nature. The available sources of power on the farm are domestic animals, heat engines and electric power. While electric power which is at present available on a very limited scale, is confined entirely to stationary work, animal power and heat engines have proved applicable for both tractive and stationary work. In India, the power required for agricultural operations is mostly supplied by animal power and human hand.

Progress of Mechanisation in Different Countries

Machinery and mechanical contrivances came into use in agriculture and farming probably in the second quarter of the 19th century and the process of their general application in agricultural operations has gone on unchecked ever since. The more highly industrialised countries of Western Europe like England were pioneers in this respect. But since World War II the leadership of the world in this matter has passed to America; the U. S. A. and Canada, followed by Russia and Australia have mechanised their agriculture more than other countries. The internal combustion engine has profoundly affected agricultural production and farm life in these countries. But in countries like China, India, greater part of Asia, Africa or S. America, the mechanisation has progressed to a very limited scale due to abundant supply of 'man' and animal power, subdivision of holdings, lack of fuelpower and the poverty of the masses. Whereas in France and Denmark, farms are well equipped with agricultural machinery and all work—from sowing, ploughing to harvesting—is done by machinery.

Advantages of Mechanisation

(i) *It increases production.* It increases the rapidity of work, the speed of work with which farming operations can be performed. According to D. R. Bomford, "The ploughman with his three-horse team controlled by three-horse power, when given a medium-sized crawler tractor controlled between 20 to 30 horse power. His output, therefore, went up in the ratio of about 8 to 1."¹ In the U. S. A. a labourer who formerly ploughed one acre of land with a pair of horses is now able to account for 12 acres a day with a gasoline-driven tractor. By this quickening of agricultural practices, the human labour required is minimised. As a result while the volume of production has undergone considerable increase in U. S. A. the number of people engaged in agriculture has remained stationary since 1900. All increases in population have been effectively drawn off to industrial pursuits and this contributed to the growth of the U. S. A. as the industrial leviathan of the present-day world. A more recent and more spectacular development in mechanisation of agriculture has been brought about in U. S. S. R., where by 1937 the agricultural output became double that of 1913 and grain production alone increased by 70 per cent. reaching the figure 120·2 million tons.

(ii) *It increases efficiency.* Mechanisation increases the efficiency of labour in agriculture and raises the agricultural production per worker. By its nature it reduces the quantum of labour required to produce a unit of output. In the U. S. A., "the amount of human labour used to produce 100 bushels of wheat dropped from 320 hours in the year 1830 to 108 hours in 1900; by 1940 a new series of improvements has reduced labour requirements to 47 hours."¹

¹ L. F. Easterbrook, *Farming and Mechanisation in Agriculture (1944-45)*, p. 56.

In the course of 110 years it has reduced the demand for labour in agriculture of wheat by 85·6 per cent. It thus changes the cost of structure of farms. Thus, whereas in West Bengal the cost of animal and human power accounts for 83·7 per cent of total costs, in U. S. A., the labour and investment make up slightly more than half the total cost on most types of family-operated farms. The gross farm production in the U. S. A. in 1945 has increased by 37 per cent over the 1935-39 average. The increased efficiency in proportion to mechanisation is indicated by the experience that in the period 1925-35 in England and Wales the manual output on farms increased by about 18 per cent.³

(iii) It enables the worker to produce many times more than what he can otherwise do by hand. According to the estimates made in the U. S. S. R., an individual farm required 20·8 days of a man's work to produce one hectare of grain in 1922-25 and a collective farm 10·5 days in 1937. Similarly, while an individual farm required 3·2 days in 1922-25 of a man's work producing 110 lbs. of grain, only one day was needed by a mechanised collective farm to do the job in 1937. Thus the productivity increased approximately three-fold in these cases.⁴

(iv) *Mechanisation increases the yield of land or the output per unit of area.* S. E. Johnson holds that of 28 per cent increase in farm output in U. S. A., above the average of 1934-39, 'only about one-fourth is due to better weather, probably less than 15 per cent has resulted from expansion of crop land acreage and the rest, about 60 per cent, is largely accounted for by the fuller use of the improvements in crops, livestock and machinery.'⁵ Increase in the yield of crops, due to mechanisation of farms, has been traced from 40 to 50 per cent in the case of maize; 15 to 20 per cent in Bajri and paddy; 30 to 40 per cent in Jawar, groundnut and wheat.⁶

The following statement given by Baykoo proves that there has been an appreciable increase in all the grain crops in U. S. S. R. on mechanised farms.⁷

Average yield of grain crops	1928-32	1933-37	1938	1939
(quintals per hectare)	7·5	9·1	9·3	9·3
Average harvest of grain crops (in million quintals)	735·9	944·7	949·9	1·054

(v) *Mechanisation results in lower cost of work.* It has been universally recognised that one of the methods of reducing unit costs is to enlarge the size of the farms and go in for more intensive farming. It is found that the cost of production and the yields

1 *Year Book of Agriculture* (1943-47) S. E. Johnson in *Science in Farming*, p. 922.

2 *The Farm Cost Situation*, Bureau of Agricultural Economics (U. S. A. Dept. of Agriculture) Sept. 1946, p. 28.

3 D. T. Brown, *Rural India*, Jan. 1950.

4 V. V. Sayanna, *Op. Cit.*, p. 164.

5 S. E. Johnson, *Op. Cit.*, p. 926.

6 *Rural India*, June 1957, p. 186.

7 Baykoo, *Development of Soviet Economic System*.

can be adjusted properly if mechanisation is resorted to. The following table shows that the cost of work and the capital outlay for power farming as compared to animal power is much less ¹:-

Cost of Tractor farming with one 40 H. P. tractor		Cost of Bullock farming with 40 pairs of Bullocks to equal 40 H.P.	
	Rs.		Rs.
Purchase price of tractor and implements	25,000	Purchase Price of Bullocks @ Rs. 400/- each	32,033
Annual Depreciation running exps. per Hr.		Annual depreciation	3,000
Fuel and Lubrication 6-0-0 per year of 20,000 Hrs.	12,000	Cattle fodder @ Rs. 40/- p. m. per pair for 40 pairs per year	19,200
Cost of labour :—		Cost of labour :—	
One driver @ Rs. 90/-		40 men for 8 months @ Rs. 25/- each p. m. 10 men for the whole year	11,000
Two mechanics @ Rs. 60/- per month	2,520		
Annual repairs	2,000		
Total	21,205	Total	33,200

Thus we find that the operating cost as well as the cost of capital outlay is less in power farming. One more example may be quoted in support of this assertion. The comparative cost of wheat cultivation per acre on mechanised and non-mechanised farms are given below² :—

Items of Expenditure	Expenditure per Acre in Rupees	
	Non-Mechanised (Muzzaffarnagar)	Mechanised Bhadrak (Lucknow)
Machinery	...	55.56
Bullocks	111.74	11.37
Labour	69.13	22.20
Seeds	12.39	19.00
Manure	64.87	2.00
Irrigation	13.06	19.53
Supervision	16.19	18.56
Land	9.13	10.00
Depreciation and interest on fixed capital	4.69	10.00
Int. on working capital @ 6% for 6 months	1.70	5.13
Miscellaneous	...	...
Total	313.99	176.35

¹ Quoted by Mrs. Mehroo Jussawalla in *Mechanisation of Agriculture (I. J. Ag. Ecos.)*, Vol. IV, p. 1156.

² G. D. Agrawal, *Economics of Mechanisation of Agriculture in Rural India*, (May-June, 1949), p. 223.

Also see *Rural India* June 1957, for experiment under in Madras, p. 184 (Table III).

(vi) Application of mechanised methods brings in other improvements in agricultural technique, notably in the sphere of irrigation, land reclamation and the prevention of soil erosion. The present-day dependence on the monsoons as the only irrigator of crops in India can be obviated by a more scientific approach. Besides, ploughing by tractor reclaims more land and thereby extends the area under cultivation, as the tractor smoothens hillocks, fills in depressions and gullies and eradicates deep-rooted weeds. It also prevents soil erosion. Besides mechanical fertilisation, contour bunding, and terracing are done by mechanical methods with the help of self-propelled graders and terracers.

(vii) With the expanded use of machinery there is a contraction in the demand for work animals for ploughing water-lift, harvesting, transport, etc. In actual operation, costs amount to little when machines are idle, whereas the cost of maintenance of draught animals remains more or less the same during both periods of working and idleness, because animals have to be fed and attended to whether they are doing work or not. It is, therefore, advantageous to use tractors when a great deal of work has to be done in a short time or in highly specialised forms of agriculture characterised by comparatively short periods of inactivity. On the other hand, employment of animals works out more economical when the work is spread over evenly over the entire year.

(viii) *It leads to Commercial Agriculture.* Mechanisation has always resulted in a shift from 'subsistence' or 'peasant farming' to 'commercial agriculture.' This shift occurs mainly due to the need for more land and capital to be associated with each farmer in order to reap the full benefits of technology. This in its turn gives rise to two tendencies in the agricultural economy: (a) gradual replacement of domestic or family by commercial or capitalistic methods and (b) search for international markets for agricultural produce.

(ix) *It brings equilibrium between Agriculture and Industry.* Mechanisation affects the economic structure in another way. It improves the efficiency of agriculture, brings it more in line with industries and thus helps to attain a parity and equilibrium between these two sectors of the economy. Mechanisation helps to bridge the gap between agriculture and industry by changing the output, wages and incomes in agriculture and thus brings about a parity between agricultural and industrial prices. From this point of view mechanisation is desirable in agrarian economy of all countries including India.

(x) *It modifies social structure in Rural Areas.* Mechanisation results in a significant modification of the social structure in rural areas. It frees the farmers from much of the laborious, tedious

hard work on the farms. Life becomes more beneficial and the standard of living rises. The pressure on land decreases and the status of the agriculturists improves.

But contrary to the above advantages, *it creates unemployment*. Any attempt to rationalise agricultural production by the introduction of labour-saving machinery on compact blocks of lands throws out of employment a large number of present agricultural population. For mechanised agriculture can usefully employ only a fraction of the labour force now subsisting on land. An economist's estimate in the U. S. S. R. computed that if agricultural production in the country could be organised as efficiently as that on the State farms, working at a high level of mechanisation, the 26 million peasant households in the land comprising 100 million of people could be displaced by an army of 1,200,000 agricultural labourers. Similarly, on a modest estimate, the man power requirements of agriculture in India after mechanisation would force out about 60 per cent of the population from farm occupations. It may be mentioned that in the U. S. A. total farm employment declined from 11,289,000 persons in 1929 to 10,852,000 in 1934 and 10,037,000 in 1945.

Scope for Mechanisation of Agriculture in India

The possibilities of the use of tractors, power machinery and improved implements in India may be examined for the following purposes :—

1. To perform timely operations with better quality of performance on land which is in regular cultivation.
2. To perform tasks such as ploughing or after harvest operations such as threshing, grading, shelling on land under cultivation.
3. To open up new lands, which have gone out of use, or those have to be brought under cultivation for the first time.

As regards the introduction of better hand tools and bullock-drawn implements on the land under cultivation, the purpose is the saving of time, labour and also cost. Unless the improved implement saves cost in addition to time and labour, it will not be adopted in the long run. Several such implements designed and fabricated in India as well as those obtained from foreign countries are available. One of the difficulties in the way of their large-scale introduction is their initial cost. "The introduction of large-scale machinery on family-operated farms is prohibited by its high costs in relation to the value of the capital that a farmer can accumulate on the typical small farm of the region. Even a small tractor may be worth five to ten years' wages of the cultivator. He could never pay for it out of the value of the *net* third, more or less, of his product that he sells."¹

¹ *Economic Survey of Asia and Far East*, 1950.

Use of the improved seeds and fertilisers by farmers, is ordinarily met with by short-term credits, which can be repaid at harvest time. But investment on better implements and machinery is rather a long-term credit. Of course, some time past, purchase of pumps, engines, tractors and farm machinery by farmers has been encouraged by grant of Taccavi loans in some States.

The use of improved land implements and bullock-drawn machinery such as mould-board ploughs, cultivators, seed-drills, reapers, etc., has a great scope in Indian agriculture. This will add to the increased production by better farm work and timely cultural operations. At present there are about 230 farms in India which are at present manufacturing improved agricultural implements. A large part of the indigenous implements is manufactured by local artisans such as the village blacksmith and the carpenter. Recently improved rice-field implements and processing machines from Japan have been found successful under conditions.

One of the difficulties in the way of introducing and popularising improved implements, is the want of spare parts and service facilities in rural areas. This is being tackled by imparting training to the village blacksmiths in several States, in the repair and maintenance of implements, engines and pumps. For this purpose financial assistance have been given from the I. C. A. R. to Orissa, Hyderabad, West Bengal, U. P., etc., for training of village blacksmiths in the field of agricultural implements.

In India there is a lack of farm machines of improved types. In 1951, there were 95,000 oil engines, 30,000 electric pumps, and 8,000 tractors. The number looks very small indeed when we remember that there are tractors in U. S. A., in England and Wales, and in U. S. S. R. and Australia for every 118 acres under cultivation in U. S. A., 87 acres in England; too acres in Russia and 210 acres in Australia. In contrast to the Occident, the Orient presents a very different picture. In countries of Far East there is only one tractor to every 33,000 acres under cultivation.¹ For the development of cultivation of wastelands alone there will be needed in India about 250,000 tractors if we calculate on the basis of one tractor for 400 acres, besides a huge number of oil engines and pumps for irrigation purposes. However, from the figures of imports of tractors and power implements for the last few years, it may be said that India has taken up mechanisation of agriculture very quickly. The following table shows the imports of these :—

Year	Number	Total Value (½ Lakhs)
1949-50	33,18	437.56
1950-51	4,930	408.74
1951-52	7,148	588.13
1952-53	1,227	218.79
1953-54	3,197	254.33

¹ *Australian Agricultural News Letter* (No. 418) Quoted in *Rural India*, June, 1957, p. 183.

These tractors have been imported from all tractor-producing countries in the world. Garden tractors suitable for rice land cultivation from Japan and four-wheel tractors of less than 10 H. P. from U. S. S. R. have recently been imported.

Performing tractor ploughing in lands under cultivation and also for doing some post-harvest operations, the State Governments of U. P. M. P., M. B., Rajasthan, Madras, Mysore, Bombay, Coorg, Bihar and West Bengal have undertaken mechanised farming on State farms. The Central Government have been giving financial assistance to the State Governments for grant of loans to the cultivators for the purchase of tractors. These State purchased farm tractors and owned them in fleets for undertaking land reclamation, weed eradication, prevention of soil erosion, and regular cultivation work in farmers' land. This system under private ownership was adopted in the U. K. and U. S. A. in the early thirties. This has many advantages in servicing and maintenance and efficient operation of the tractors. Only the more difficult operations as ploughing the land are done by the tractors, while the lighter operations as cultivating, seeding and weeding are done by the farmers with their bullocks. As tractors are employed only for the part of time, it is not economical in the long run. It is estimated that in U. S. A., unless the tractors work for about 120 days, per year, or 1,000 hours per year, they will not be able to balance the depreciation and other standing charges. So long as bullocks are maintained on the same farms, where tractors are to work, it will not be possible to utilise either of them to full advantage. India has certain advantages in this respect. There are two crop seasons a year throughout most of the country. Also many crops are grown in the same area, thus making it possible for the tractors to work for longer number of days in the year. So far, advantage has not been taken of this aspect to the desirable extent.

The following table gives the progress of Land Reclamation in India¹ :—

Year	Area Reclaimed by State Tractor Organisation	Central Tractor Organisation	Total
1949-50	485	78	563
1950-51	504	285	789
1951-52	420	253	473
1952-53	258	266	524
1953-54	427	288	715
1954-55	229	190	419
1955-56 Target	404	N. A.	404

¹ *Indian Agriculture in Brief*, 1956, p. 28.

The Central Tractor Organisation was initiated in 1946 and has the biggest fleet of tractors composed of 374 heavy and about 51 medium tractors. There are two units of 15 tractors each which carry out jungle clearing operations. The workshop of the C. T. O. in Delhi manufactures spare parts and is responsible for the maintenance and servicing of many vehicles. During 1953-54 eighty types of spare parts numbering about 13,550 and amounting to nearly 3.50 lakhs in value were manufactured here. In the other workshop at Bairagarh, only those repairs which cannot be carried out in fields are undertaken.

The Government of India have set up two large mechanised farms one in Jammu and Kashmir and the other in Bhopal. The Central Mechanised Farm at Jammu was established in Sept. 1952 and amount spent up to March 1954 was Rs. 26.04 lakhs. It has so far reclaimed an area of over 17,000 acres. It produces pure cereal seeds which are available for further multiplication in the State. The farm at present maintains about 40 tractors and 110 other improved implements. The land has been transferred by the J. & K. Government to the Government of India on lease for a period of ten years for purposes of mechanised cultivation and providing employment to the displaced persons. An area of 4,250 acres is being cultivated with paddy, pulses, sann-hemp and fodder.

The Central Mechanised Farm at Sultanpur in Bhopal was started in September, 1953 and the expenditure incurred on it up to March 1954 was Rs. 5.53 lakhs. A part of the 10,000 acre farm land belongs to the evacuees. Of the reclaimed area 2,650 acres have already been brought under cultivation, the crops sown being paddy and pulses.

Thus it may be said that mechanised agriculture is primarily associated with grain farming of an intense nature in Western countries. It has resulted in "notable geographic shifts towards relatively level topography, particularly to cheap lands of low rainfall in Canada, Australia, Argentina and the western parts of U. S. A. which could not be cultivated economically under more laborious methods."¹ Such geographic shifts would be desirable in India where there are lakhs of relatively level culturable wastelands. Besides, mechanisation can be profitably adopted for the construction of country roads, drainage, and irrigation channels, development of underground water resources, and land reclamation. Of course the types of machines that will be needed will depend on the nature of the work for which they are to be used. Development of wastelands will require rather heavy types of tractors while arable lands will need lighter types. In this connection we

¹ *Encyclopaedia of Social Sciences*, Vol. I. p. 556.

may quote Lamartine and Wariner : "If the first era of agricultural machinery was characterised by the size, the second era on which we are entering appears to be devoted to evolving small machines for the small men."¹ Hence, for the land development and for annual ploughing on large estates, the tractor is most suitable while stationary oil engines can be used for sinking bore holes, and for water lifting.

1 Lamartine and Wariner, *Food and Farming in Post-War Europe*, p. 75.

CHAPTER 15

AGRICULTURAL EQUIPMENT

Apart from the general considerations of economic policy which forms the necessary background for all improvements designed to increase the yield of crops, the main factors that need to be looked into in this connection may be set as below :—

- (i) The improvement in the conditions of the man behind the plough,
- (ii) Improved implements,
- (iii) Improved seeds,
- (iv) Protection of crops from insects and pests,
- (v) Better use of manures and fertilisers,
- (vi) Provision of water supply for crops, and
- (vii) Prevention of soil erosion.

The last three factors have already been discussed in detail in the foregoing chapters. Here we shall discuss the part which other factors play in the crop improvement.

I. The Cultivator or Man behind the Plough

It is quite true to say that efficient agriculture depends on the qualities of the man behind the plough more than anything else. For peasant farming, as it is carried on in India, demands for its successful working not only great application and perseverance but also the unwearied exercise of prudence, forethought, and watchfulness, and the utilisation of scientific knowledge so far as it bears on the peasants' calling. The value of the human factor, therefore, is not to be overlooked in taking stock of the agricultural situation for, as Prof. Carver has so aptly remarked, "Communities and nations have remained poor in the midst of rich surroundings, or fallen into decay or poverty in spite of the fertility of their soil and the abundance of their natural resources merely because the human factor was of poor quality or was allowed to deteriorate or run to waste."¹ In order, therefore, to understand the present position of Indian agriculture an attempt must be made to assess the merits and defects of the Indian cultivator.

Is Indian Cultivator inefficient ?

He has been acknowledged to be inferior in point of intelligence, enterprise and capacity for labour to the European or

¹ T. N. Carver, *Principles of Rural Economics*.

American farmer. His inefficiency is not innate or rooted in the nature of things and is capable of being remedied. He is bowed down with heavy and weary weight of many burdens and handicaps and the wonder is that he still continues to carry on the struggle for existence, and is not altogether extinct. Although in view of India's diversity it is not safe to indulge in generalisations about the different types of cultivators in the different parts of the country, as the same time there is a family resemblance between these cultivator types. "There is the same plainness of life, the same wrestling with the uncertainties of climate (except in favoured areas), the same love of simple games, sports and songs, the same religious background, the same neighbourly helpfulness, and the same financial indebtedness."¹

Seemingly contradictory views have been expressed by authorities about the conservatism, ignorance and inefficiency of the Indian peasant and that he has been often accused of a profound distrust and apathy towards new methods. But I maintain that the Indian farmer is neither foolish nor ignorant as he is generally painted. He knows his business well. He has certainly not been in a position to study agriculture as science, nor has he been in any college or school, nor has he got a training on modern scientific lines in any foreign country yet he has the experience of generations behind him which has enabled him to pick up practical knowledge of his art. But his methods are based on scientific principles. J. Molison has rightly remarked in this connection, thus, "To those who are sceptical I can say, in parts of the presidency, cultivation by means of neatness, thoroughness and profitableness cannot be exceeded by the best gardeners or the best farmers in any part of the world. This statement, I deliberately make and I am quite ready to substantiate it." Similar eloquent testimony has been given by Prof. Rushbrook Williams. He remarks, "It has been said that the experience of the last few years seems to indicate that his conservation is generally that of the practical farmer, who requires good reasons for departing from established practices and when the success of improved methods can be clearly demonstrated, they spread with remarkable rapidity. Hence, in many places, the cultivator, despite his lack of education, is beginning to look up on the agricultural expert as a friend and guide."²

Within the existing conditions and limitation, the skill and resourcefulness of the Indian cultivators have been testified by experts. In 1889, the Government deputed Dr. A. J. Voelcker,

1 Dr. W. Burns, *Sons of the Soil*, p. viii.

2 J. Molison, *Indian Agriculture*.

3 Rushbrook Williams, *India in 1924-25*.

Consulting Chemist to the Royal Agricultural Society, to conduct an investigation into Indian agricultural technique and suggest improvements. He wrote :¹

"On one point there can be no question, *viz.*, that the ideas generally entertained in England and often given expression to even in India, that Indian agriculture is, as a whole, primitive and backward, and that little has been done to remedy it, are altogether erroneous. It is true that no matter what statement may be made, as deduced from the agriculture of one part, it may be directly contradicted by reference to the practice of another part ; yet the conviction has forced itself upon me that, taking together and more especially considering the conditions under which Indian crops are grown, they are wonderfully good. At his best the Indian cultivator is quite as good and in some respects the superior of British farmers, whilst at his worst it can only be said that this state is brought about largely by an absence of facilities for improvement which is probably unequalled in any other country and that the ryot will struggle on patiently and uncomplainingly in the face of difficulties in a way that no one else would.

"Nor need our British farmers be surprised at what I say, for it must be remembered that the natives of India were cultivators of wheat centuries before we in England were. It is not likely, therefore, that their *practice* should be capable of much improvement. What does, however, prevent them from growing larger crops is the limited facilities to which they have access, such as the supply of water or manure.

"But to take the ordinary acts of husbandry, nowhere would one find better instances of keeping land scrupulously free of soils and their capabilities as well as of the exact time to sow and to reap, as one would in Indian agriculture, and this not at its best alone, but at its ordinary level. It is wonderful too how much is known of rotation, the system of mixed crops and fallowing. Certain it is that I at least have never seen a more perfect picture of careful cultivation, combined with hard labour, perseverance and fertility of resource, that I have seen in many of the halting places in my tour."

The same is the opinion of the Royal Commission on Agriculture, who have given a very good certificate to the Indian cultivator. They observe, "That in many places, the system of agriculture has attained a very high standard is a matter of common knowledge ; the cultivation of rice in the deltas, for example, has reached a marked degree of perfection and the wisdom of many agricultural proverbs stands unchallenged by research. The careful terracing of the hillsides, the various methods

1 J. A. Voelcker, *Report on the Improvement of India Agriculture*, p. 10.

of irrigation from wells and tanks, the construction of accurately designed channels from the streams to the fields and similar achievements in improving land discloses skill, ingenuity and patient labour. In the conditions in which the ordinary cultivator works, agricultural experts have found it no easy matter to suggest improvements."¹

There is a wrong notion very widely current that the Indian cultivator is generally extremely conservative and loath to take up any ideas which are new to him or to adopt anything new in respect of new crops, improved implements, fertilisers, methods, etc. But this can at once be refuted by facts and figures and in fairness to him it should be said that he is not orthodox and conservative in this respect to the extent to which he is accused. "He is dependent on the vagaries of monsoons, and his crop is exposed to many disasters, a day or two of fierce sunshine, a few hours, of drenching rain, frost and hail, locusts, and many other forms of insect life or blight, a bout of fever attacking him at some critical time and when crop is ripe, a night snatched, for rest may let in thief, the wild boar, the antelope or one morning of neglect may set the green parrots tearing down the ears" Such are some of the risks to which he is exposed. It should not be, therefore, forgotten that the cultivators are poor and a poor man cannot ruin himself by hazarding an experiment of whose utility he is not fully convinced. The Royal Commission has rightly remarked that, "there is very little that can be taught to the agriculturists of this country by the so-called expert in the charge of the department."

Limitations under which Indian farmer works

His various limitations are to be taken into account while considering whether he is really accused of the charges laid against him. Of these his *poverty* is the chief obstacle in his way. Knowing well that a certain crop or a certain new fertilizer would be profitable to him in the end, the cultivators in India possess the essential knowledge and the required skill but not the finance and the proper lead and hence the remark.

(ii) The *illiteracy of the cultivator* is another obstacle in the way of the improvement of agriculture in India. But in this case also one should take a bit lenient and liberal view. He may be illiterate, he may not know how to read and write but he is intelligent and clear enough to know his business well, to understand things if they are put before him in an understandable manner and in the right perspective and to adopt new methods if these

¹ Report of Royal Commission on Agriculture, p. 14.

² F. L. Brayne, *Village Uplift in India*, p. 9.

are properly demonstrated and explained to him. He will not be slow to adopt a new crop or new method if he is convinced that it will be profitable to him and he has the means and facilities to adopt it. The extent to which new strains of various crops, sugarcane, wheat, rice, pulses and tobacco, etc., and new crops like the English vegetables are being cultivated in recent times, will bear testimony to his intelligence and capacity to adopt new ideas and new methods. Molison and Sly very truly said, "When the Indian farmer has been given an object lesson clearly demonstrating the value of the innovation, he is by no means slow to appreciate the results. The chief thing to be remembered in this connection is that to win the cultivator's confidence one should interest himself in his point of view." One must attempt to reconcile the triangular conflict between the man, the land and the animal. The greatest tragedy again is that the cultivator's confidence in the experts has been violently shaken and shattered in the past by their own actions in many cases, as some one has so rightly said, "The Agricultural Officer distributed the necessary materials just after the fair either because he did not receive the stock or because he did not receive any order from his superiors. The ammonium sulphate was distributed as and when the Agriculture Department had stocks but not as and when the ryots required it. There is a legion of such instances in which seeds, manures, etc., were recommended and supplied without any regard to the suitability of soil or climatic conditions. In many cases improved strains of crops were recommended which proved inferior to the local varieties at a very great cost to the cultivator."

(iii) *Physical inefficiency* of the peasant is yet another obstacle coming in his way to improvement. "By his insanitary habits of living, he draws upon himself much avoidable physical suffering, with its attendant evils of low vitality and incapacity for persistent and strenuous labour and a sombre outlook on life. Our cultivators are a prey to such major diseases as malaria, cholera, plague, dysentery, tuberculosis, kala-azar, hookworm and certain minor diseases like skin complaints and leprosy. Besides the diseases he is prone to litigation, improvidence and recklessness; and too fond of locking up his capital in jewellery and trinkets instead of devoting it to such forms of personal expenditure as would increase his efficiency, or employing it in more remunerative investment. He generally spends far beyond his means on marriages and thus walks with open eyes into the money-lender's parlour, from which he is rarely able to get out"¹ For these too he cannot be blamed as the supply of money to them is still inadequate in view of requirements; and health services too are badly lacking in the rural areas.

¹ Jathar and Beri, *Indian Economics*, Vol. I, p. 213.

The illiteracy of the farmers stand in their way to progress. Hence, provision of education should be resorted to. While formulating a scheme of agricultural education of a practical nature for the benefit of the cultivators we should remember that one type of education will not suit the older and younger sections of the people and different types of practical training in agriculture should be adopted for adult cultivators, for their sons and wards without any school education, and for the school-going children in the countryside. The adults cannot be expected to lose time for their training, nor can they be expected to lose their normal earning out of the soil during the period of the training. The following two types of practical training in improved methods of agriculture may, therefore, suit them:—

(i) There should at least be a twenty-acre farm in each convenient unit. The farm should be divided into two blocks, one block to be run on improved methods and the other on local methods. Both the blocks should be cultivated on *barga* or share system. Conditions being more favourable to the cultivators, the improved methods should be such as will be suitable for the locality and will be within the reach of the cultivators.

(ii) It will be a good idea to induce landlords to start a *barga* farm on improved methods close to their big offices or *kutcheries* in the interior. }

In the case of cultivators without any school education too, it should be remembered that they cannot be expected to lose the services and the help of their sons and wards in their field-operations at the same time to spend money on their training. They should, therefore, earn when they are being trained. The best thing will be to employ them on wages in the Government farms cultivated by hired labour. From the very beginning their wages should be such as will enable them to meet their living expenses on the farm. But if their work compares favourably with that of the other labourers of the farm they should be paid equal wages. They should live in the labourers' sheds and should do all their work including cooking. They should be given work on the farm in such a way as will enable them to learn the cultivation of a crop from the beginning to the end. They should be thoroughly acquainted with the costing of each crop. This is very important. Generally during the evenings and particularly during the slack seasons simple talks should be given to them on soils, manures, rotation of crops, insect and fungus pests, etc. They should be employed on the farm at least for two years. }

Special text-books on agriculture should be prepared and they should be written by men who have practical experience of agriculture under different conditions and have a real command

over the local language. The examples and illustrations given in the books should be based on crops and conditions prevalent in the locality. Facilities should also be available to the persons desirous of acquainting themselves with improved methods of agriculture with the object of applying them to their own lands and educating the men in their localities. For this purpose suitable persons may be invited to the District and Central Farms twice in a year, *i.e.*, during the two main seasons and to stay at the farm for a month or so to acquaint themselves with the improved methods carried out there. Government should meet their travelling expenses and also the expenses during their stay on the farm.

Side by side with the types of agricultural education intensive publicity should be carried on in the countryside in season and out of season according to a definite programme to educate the people in improved methods of agriculture suitable for the conditions of each area. It should be remembered in this connection what Brayne has said, "Well-organized publicity greatly increases the amount of work done by each rupee of Government money spent on rural reconstruction. The neglect of publicity is, therefore, a very short-sighted economy. Adequate propaganda connotes adequate funds for it and it is better not to have any propaganda at all rather than a half-hearted propaganda." The success of publicity very largely, if not wholly, depends upon its personnel, as Brayne has put it, "Publicity is a technical subject. It is one thing to have a message for the villager. To deliver that message effectively is quite another thing and the technique has to be specially learnt. All, therefore, who are trying to teach the villager new ways and to popularize new things should receive definite training in publicity methods and technique." Briefly speaking, the publicity man should not only possess a capacity to talk well in the language of the people but should also have a full knowledge of the subject of his talk and of the suitability or otherwise of the locality and of the people for the application of that knowledge. As regards the methods of publicity all the modern methods such as wireless, cinema, dramas, songs and dances, verses, leaflets, pamphlets, posters, models, exhibitions, shows, competitions, meetings, demonstrations, press, etc., may be adopted. But of these the most important are demonstrations, special weeks, and exhibitions and shows, etc.

II. Improved Implements

An agriculturist's capital consists of farm implements which are comparatively few in number, simple in kind, smaller in size, obsolete in character and very insignificant in value. They are light, portable and within the capacity of draught oxen. His capital in the shape of instruments of production includes: (1) the plough and the ploughshare used for the upturning of the soil

and driven by either a pair of bullocks or a pair of bull buffaloes. The antiquated plough is such that it scratches only a few inches of the upper surface of the soil and does not invert the soil. The main advantages of the light Indian plough, as recognised by even eminent authorities are that it is within the haulage capacity of ordinary draught animals, and *secondly* its cultivation does not lead to the evaporation of moisture, which is lacking in the Indian soil owing to its dry nature and the seasonal character of the rainfall; (ii) the *wooden yokes* in which bullocks are yoked either for hauling the plough or at the time of lifting water from the wells; (iii) the *seed drill* which is generally made out of a long, hollow piece of bamboo with a funnel at the upper end, facilitates even distribution of seed into the newly-made furrows by the plough, to the handle of which this implement is tied while sowing; (iv) the *pata* or the leveller used for levelling the field preliminary to sowing; (v) a massive wooden roller used for crushing clods; (vi) a *charsa* (a big leather bucket) for drawing water from the wells; (vii) a big and heavy rope; (viii) a wooden structure of strong logs of wood raised on one side, upon which a pulley is set which facilitates the movement of the rope fastened with the leather bucket; (ix) a spade or *khudari* used in irrigating purposes and to some extent in assisting the ploughs; (x) The *khurpi* (trowel) used for harvesting; (xi) the *jeli* or five-fingered fork used for weeding, and spacing out; (xii) the *hasia* or the sickle used for upturning the harvested crop when it is being trodden by the feet of the bullocks for separating chaff from the corn; (xiii) a long, rough, thick woven cloth used either in covering the crop on the threshing floor from rain or winds or in taking it to the market; (xiv) the cart used for transporting purposes, but owing to its prohibitive cost it is not within the reach of every peasant; and (xv) the grain set aside for sowing the next crop.

It is a great pity that the agricultural implements used by our farmers are primitive and inefficient. If the village is to improve agriculturists must use improved implements. Though isolated attempts by individual workers, agricultural engineers and others have continued, but neither the scale of these attempts nor their result can be regarded as very satisfactory. There has been some advance towards the evolution of more efficient implements such as iron plough, seed drills, harrows, cultivators, soil-scoopers, clod-crushers, ridgers, chaff-cutters, groundnut diggers and decorticator, turmeric polishing machines, maize shelters, etc. Attempts have also been made to evolve suitable threshers and winnowers. The most popular of the improved implements are the light iron ploughs, chaff-cutters, iron sugarcane-crushing mills and iron persian wheels. Improved sugarcane-juice-boiling furnaces have also been generally adopted. |||

The following table gives the number of agricultural implements of improved types in use in India¹ :—

Implements	1945	1951
	(In millions)	
Ploughs	27·8	32·7
Carts	8·5	9·9
	(In thousands)	
Sugarcane Crushers	490	541
Oil Engines	12	95
Electric Pumps	9	30
Tractors	52	82

¹ Relates to Tractors used for agricultural purposes only.

Whatever progress has been made is very limited and much yet remains to be accomplished in this direction. The Agriculture Departments have so far done disappointingly little in this direction. Sir John Russel strikes a more hopeful note, when he observes, "The new implements are not always more effective than the old but they are lighter, require less labour of men and bullocks, and they do their work more rapidly. Economy of bullock power means that the large cultivator need not possess so many bullocks and so can better feed his milch cattle ; and speed of work means that operations can be done just *when necessary and when therefore they are most beneficial.*"²

An illustrated account of the various implements and other farm-equipments in use in India would be of assistance in the investigation of improved types and for this purpose a collection of such implements and other equipment should be made and kept in a Central Museum established for this purpose.

Further to help cultivators in the increased use of such implements it is necessary that Local and District Boards should give a bold lead in this direction. These should raise loans for the purchase and supply of the improved implements, and distribute them amongst the *Village Panchayats* on the basis of careful investigation of the nature and size of agricultural holdings in the village, the area under cultivation, and the number of cultivator who cannot afford to purchase these implements at a rate which will cover the cost of implements, and the cost of repairs. The *Village Panchayats* should collect the rates charged at the time of harvest

¹ *Indian Agriculture in Brief*, 1956, p. 69.

² J. Russel, *Report on the Work of Imperial Council of Agriculture Research*, p. 59.

preferably in grain. The co-operation of private agencies may also be sought to secure this object. In this connection the Royal Commission on Agriculture has rightly remarked, "The use of large-scale machinery such as stream tackle and motor tractors and indeed every form of power machinery is obviously entirely outside the purview of a small cultivator in the present conditions (*i.e.*, scattered and uneconomic holdings, his poverty, etc.) and the only hope of placing it within his reach is by co-operative effort."

III. Improved Seeds

Of all the methods of improving agricultural technical, such as the rational rotation of crops, the use of chemical fertilizers and green manures, the introduction of hoed crops, deep tillage of soil, perfect mechanical harvesting none has brought about such progress as the improvement of plants through selection and cross-breeding. These methods of improvement entail considerable expense and constant care, whereas the use improved varieties of seed only involves the agriculturists in the slight extra expense represented by the surcharge of a few centimes per capita of seeds, the introduction of a better variety in an agricultural area means an immediate profit for the agriculturist. It improves the crop either in quantity or in quality while scarcely increasing the cost of cultivation. The creation of variety with an improved yield and quality is, therefore, one of the simplest and most effective means of raising the general level of the country's economy.

If an improved variety is to give the best results, careful methods of cultivation and intensified manuring must accompany the use of improved varieties which repay the care given to them and make it possible to obtain maximum return from the soil. The introduction of choice varieties and the use of perfectly intensified methods of cultivation are complementary to each other. This interdependence between improvement of method of cultivation and that of the varieties cultivated is one of the best stimuli to agricultural progress. Among the various means of fostering agricultural progress and raising food production the improvement of plants is of outstanding importance.

The methods of producing better varieties include the introduction of new forms, selection from variations occurring in nature and from those artificially induced by hybridisation of plants and indeed all those means by which conscious improvement of plants may be accomplished. It has been estimated that an increase in the production of 10 to 15 per cent can be

obtained from improved varieties. On the basis of Dr. Burns' report, the following table has been prepared :¹

Crop	Yield (lbs.) per acre	Possible % Increase due to per acre (lbs.)					Target yield Total
		Seed Production	Manure	Irrigation			
Rice	738 (1938-43)	5	5	20	...	30	959
Wheat	640 (1933-43)	5-100	...	Yes	Yes	...	1200 (600 lbs. for irrigation)
Jowar	484 (1917-43)	...	Yes	Yes	Yes	20	...
Bajra	320	...	...	...	25	25	400
Maize	800	Yes	...	Yes	...	35	1000
Grain	316 (1918-43)	20 (using disease free seed)					600
Sugarcane	15 tons	100	...	...	...	11	30 tons
Ground-nut	900	11	...	...	...	11	1000
Casor	259 (19-43)	10	...	...	...	10	285
Cotton	90 (1913-43)	May	Yes	May	...	...	...
Jute	16 mds.	Yes	...	Yes	...	25	20 mds.
Potato	?	Yes	Yes	Yes	...	100	?

⁽¹⁾ The traditional methods of crop improvement consists of introduction and selection. The former is the method of introduction in any given tracts varieties of superior worth which previously consisted of a systematic isolation of better strains from the mixed populations grown by the farmer. There are two kinds of selection work. In many crops the breeder critically examines individual plants and picks out growing in the succeeding year those which are promising. This is the method of simple plant selection and is commonly practised in crops like mustard and bajra. The more suitable method is what is called *mass selection*, that is, picking out not individuals but a group of plants which confirms or is the nearest approach to the breeder's ideal. The application of these two methods of selection is based on the way in which fertilisation and consequent seed formation take place. In crops like wheat, paddy and jute the seeds are formed by the union of the sexual elements of one and the same plant or the same flower. This is known as '*self-fertilisation*.' For the formation element of the plant with the female element of a different plant is the rule this is called '*cross-fertilisation*.'

Good results have been achieved in the past and continue still to be achieved by these methods. But unfortunately their scope is restricted to only those varieties in which the desired combination of characters are readily available. More often than not we find the useful characters, either all of them or as many as possible in one variety by means of hybridisation in plants has been in practice for a fairly long time now and this method has been responsible for remarkable success in crop improvement.^{1/}

¹ W. Burns, *Technological Possibilities of Agricultural Development in India* (1944)

The chief reasons why the use of improved varieties has not made much headway in India so far are that they generally require a more liberal manurial treatment than the accustomed varieties. *Secondly*, there is difficulty in obtaining adequate supplies of certified seed due to the lack of an effective seed trade to take up new varieties, multiply them and distribute them to cultivators at reasonable prices.¹ However, in spite of efforts through G. M. F. Campaign, to encourage food production, only 20% of the area is estimated to be under such improved seeds. The following table shows the area under improved varieties of food crops and the scope for further expansion² :—

Area under Improved Varieties of Food Crops
(00,000 acres)

State	Area under Improved Varieties	Total Area under the crop	% of Col. 2 to Col. 3
1	2	3	4
<i>1. Paddy :</i>			
Bihar	27.62	143.45	19
M. P.	10.17	89.33	11
Madras	3.69	101.26	4
U. P.	8.25	93.34	9
Bombay	6.56	30.01	23
Punjab	5.56	5.56	100
Assam	1.98	40.48	5
W. Bengal	0.52	98.30	0.5
Hyderabad	0.47	11.41	4
M. B.	0.08	2.94	3
Mysore	1.13	7.81	14
T. C.	1.00	8.00	13
<i>2. Wheat :</i>			
Punjab	30.29	30.29	100
U. P.	15.50	77.27	20
M. P.	2.35	25.03	9
Bihar	2.28	13.68	17
M. B.	0.41	19.47	2
PEPSU	2.82	9.40	30
<i>3. Jowar :</i>			
Bombay	30.62	101.15	30
Punjab	6.22	6.22	100
M. B.	0.61	27.60	2

¹ Sir J. Russel, *Report on the Application of Science to Crop Production in India*, (1939), p. 51.

² *Report of the Grow More Food Enquiry Committee*, 1952, p. 217.

Area under Improved Varieties of Food Crops
(00,000 acres)

State	Area under Improved Varieties	Total Area under the crop	% of Col. 2 to Col. 3
4. <i>Gram</i>			
Punjab	31.65	31.65	100
U. P.	6.67	60.28	11
Bihar	1.50	12.68	12
M. B.	0.12	13.48	1
5. <i>Bajra</i>			
Bombay	2.21	49.75	4
Punjab	20.45	20.45	100

The crop competitions instituted by the Government of India since 1949-50 have also acted as healthy factor among the farmers for increasing the yield. The following figures reveal the impetus they have given¹ :—

Crop Competition—Yield Per Acre

Crop	State	Year	Highest yield per acre obtained in respect of a plot entered for crop competition (lbs.)	Average yield per acre in the respective State for the respective year (lbs.)
1. <i>Rice</i>	W. Bengal	1954—50	4,045* (4.8)	844* (1)
	Madras	1950—51	6,802* (7.7)	884* (1)
	Coorg	1951—52	7,469* (7.2)	1,032* (1)
2. <i>Wheat</i>	U. P.	1950—51	4,908 (6.7)	732 (1)
	Punjab	1951—52	5,892 (6.8)	868 (1)
3. <i>Jowar</i>	Bombay	1951—52	6,959 (26.4)	264 (1)
4. <i>Bajra</i>	Bombay	1951—52	2,411 (13.3)	181 (1)
5. <i>Gram</i>	Punjab	1951—52	3,789 (60.5)	586 (1)
6. <i>Potatoes</i>	U. P.	1951—52	60,529 (9.1)	6,650 (1)

Important varieties of improved strains are as follows :—

(i) *Sugarcane*. The most striking success has been achieved in the case of sugarcane. The canes formerly cultivated in India were thin, low in yield and poor in quality. The superior canes bred at Coimbatore are more vigorous, many times bigger in yield and richer in quality as compared to the local varieties. The Coimbatore

¹ *Indian Agriculture in Brief*, p. 38.

* (Yield per acre, in terms of Cleaned Rice ; figures in the Brackets represent the 'Crop Competition' yield per acre expressed in relation to the average yield per acre (=1) in the respective states for the respective year),

canes naturally spread all over the country in a surprisingly short time and now nearly 80% of the total area of sugarcane is under the improved varieties. Some of the Coimbatore canes which have become popular are Co. numbers 205, 210, 113, 214, 244, 281, 290, 313, 331, 419 and 421.

(ii) *Cotton*. In Andhra Pradesh a variety of cotton known as Gaorani local had been under cultivation for a long time. It was a shy yielder, low in ginning outturn and difficult of clean picking. An improved strain named Gaorani 6 Gadok, Surti Suyog, in Bombay the improved strains Jarila, Suyog, Jayawant, and 1027 are popular. W. 434 is the outstanding one among the improved varieties of cotton evolved by the Department of Agriculture

(iii) *Rice*. The Department of Agriculture in Bengal, Bombay, Madras and M. P. and Bihar have evolved and released for cultivation superior strains of paddy. The most important of them are (a) *gesovalum* ; Latiul 8/30 ; No. 834, No. 809 ; Jhanji 34 and *Indrasail* of Bengal ; (b) G. E. B. 24 and A. D. T. 14 ; 4 of Madras ; (c) K 154 and k 540 Mushate Rice No. 1315 ; Zaidu No. 1016, Halga No. 244, 201, 49 and 242 of Bombay ; (d) No. 115 B ; No. B. K., and 38 B. K. No. 36 B. K. of Bihar ; (e) No. 715 in M. P.

(iv) *Wheat*. No. Pusa 52 of Bihar ; Pusa No. 4 and 12 of U. P. Wheat No. 3,439 and 3,469 of M. P. and No. C. 518 ; Punjab 8-A, 9-D and Pusa 125 of the East Punjab.

(v) *Jowar*. Nos. 35-1 ; 47-3 ; White Phalgar and Nandyal 224 of Bombay ; No. 8 of East Punjab ; No. 123 and E. B. 9 of M. P.

(vi) *Gram*. Nos. 62 and 352 of M. P. ; and No. F. 8 and Punjab 6 of East Punjab.

(vii) *Bajra*. 9-1/3 and G-61/2 of East Punjab. No. 206 and 207 of Gujrat type of Bombay ; Imperial Pusa No. 51 of U. P.

The full benefit of better varieties of crop plants can be realised by the cultivators only when sufficient quantities of the seeds are made available to them. The Research Station cannot produce the seeds of improved varieties on a scale large enough to meet the demand of this vast country. We, therefore, require a separate organisation for this work. The Research Station will maintain seed farms for multiplication of pure seeds of the improved varieties. From there the seed will have to be passed on to the registered seed-growers, whose work is further to multiply the seeds on an extensive scale. It has been estimated that the distribution

of such seeds and the recovery of the cost in kind or in cash necessitates the establishment of about 5,000 seed stores. In some cases like cotton and tobacco where uniformity of produce is of primary importance, the growing of particular variety in an area may have to be made obligatory. The cultivators should also be encouraged to obtain their seeds from some approved source such as a Government or Co-operative Seed Depot or a licensed seed merchant, as seedmen of Western type do not exist in India. Due to absence of any such private agency the distribution of improved seeds is taken by Agriculture Departments and to a limited extent by co-operative societies, and agricultural associations. For the adequate distribution of improved seed adequate number of seed depots in all States should be opened up immediately.

The future prospects of plant breeding are very promising for the reason that breeders in the different organisations are now familiar with the needs of the country and with the methods of attacking different problems, but it must be emphasised in this connection that further progress in the production of new and better varieties of crop plants is by no means as easy as it has been in the past. There is now no room for haphazard methods of breeding whether it is selection or hybridisation. The breeding programme of any particular crop must be carefully thought out and arranged in accordance with a definite line of action for it is only by intelligent and deliberately planned research that further progress can be made.

In this respect the example of America should be followed, where more than 50 improved varieties of wheat have been distributed among the farmers in the last decade. They resist rust, smut and other diseases, drought, insects or winter killing major hazards that threaten crop in one place or another. Better yielding and disease-resisting varieties of different types of crops such as maize, barley, wheat, vegetables like tomatoes, onions, potatoes and commercial crops like cotton, sugarcane and tobacco have been produced in America. In India, too, such action is absolutely necessary for successful increase in crop production where diseases among crops, such as foot-rot, and blast in the case of paddy, mosaic and red-rot in sugarcane, smut in maize and wilt in wheat and groundnuts cause great loss to the farmers by way of reducing the yield of crops. These are caused by fungi-pests which eat up all the nourishment that the crop draws for itself from the earth and thus prevents its healthy growth.

IV. Protection of Crops from Insect Pests and Diseases

The normal loss to crops in India from diseases and pests, vermins, etc., may be placed at 10% of the total produce.¹ Insects

¹ *Famine Enquiry Commission Report*, p. 163.

like the locust, caterpillar, the rice-grasshopper, the army worm, the paddy steamers, the rice hisper, the rice-bug and gadfly which attack rice, are responsible in varying degrees for the low yield of rice. It has been estimated that insects consume 10 per cent of the world's crop and probably 20 per cent of the crops grown in the tropics. In India alone losses from insect pests on crops and forest trees were calculated at £ 136,000,000 in 1921. On a conservative estimate rats alone destroy foodgrains amounting to about 8 million tons per year.¹ Against the animal pests, elephants, wild pigs, deer, jackals, monkeys, porcupines, rats, flying foxes, rabbits, paroquets, sparrows, and crows, stray cattle and goats the farmer has to carry on constant warfare. If, therefore, the full benefits of irrigation, manuring and improved varieties are to be assured effective action must be taken to deal with diseases, pests and vermins, crop protection is an important factor in increased production.

Admittedly control of the majority of insect-pests and diseases requires expert supervision and equipment which are not readily available to the farmers, but many of the diseases and pests can be effectively controlled by taking simple and timely precautions. 'Prevention is better than cure' may aptly be applied to plant protection. Fungi which are responsible for a great deal of harm to field and orchard crops may be externally or internally seed borne. In the former case, fungicides like copper, mercury, sulphur or formaldehyde dusts can be easily employed to disinfect the seed. The *grain smuts* of jowar, the *covered smut* of barley, the *foot-rot* of rice and the damping off of vegetables and other seedlings are all controlled in this manner. Where the disease is internally borne as in the case of *loose smut* of wheat, the seed is soaked and then placed in the hot water registering about 130° F. for ten minutes. The disease-causing fungus is thus effectively killed. An ingenious modification of this method has been evolved in the Punjab where the summer is very hot. The grain is soaked in water from early morning till noon, then exposed to the sun till sundown.

If the disease is air-borne as in the case of early and late *blight* of potato, *mildew* on grapes, mangoes or pears, leaf-curl of potatoes, *rusts* of figs, etc., timely spraying with fungicides like Bordeaux mixture will give efficient protection.

The loss during storage caused by weevils has been estimated to be about 5 per cent of the total production. The most important and simple method of preventing weevils infesting stored grain is to dry the grain well by spreading them out in the sun before storing them. It is also important to have damp-proof stores

¹ *World Agriculture, An International Survey*, p. 50.

which are free from crevices, holes, etc., so as to prevent entry of rats, insects and other vermins.

Fruit flies cause immense damage to a variety of fruits and vegetables. It has been frequently demonstrated that if the infested fruits, which generally fall from the trees, are picked or burnt or buried, the incidence of the pest is kept down. This is simple method requiring no elaborate arrangement or expense.)))

Simple agricultural operations and cultural methods, like rotation of crops, field sanitation, deep ploughing, flooding, etc., can control quite a variety of pests which cause severe damage to crops, for instance, the removal of all stubble after harvest of paddy, sugarcane, cholum or cotton will prevent bores resting in them and attacking the subsequent crop. Many pests feed on weed and grass when their food plants are not in the fields. *Army worm*, *ricebug*, *paddy mealbug* are examples of such pests. Periodical weeding of the fields would obviously keep down the severity of attack from such pests. The depth to which the soil must be ploughed to exterminate these weeds varies : the average appears to be about 10 to 11 inches, though in some areas it is as much as 15 inches. This may be done by means of tractors. Investigations should be directed into the eradication of water-hyacinth and lantans, to noxious weeds which seriously interfere with the cultivation of land. Further, positions of dead trees or plants should be removed immediately.

A Examples of such simple methods to combat pests and diseases of crops can be multiplied. But for the treatment to be effective, however, simple it may be, a knowledge of the approximate times when various diseases appear in the field is necessary and proper timing of the treatment is of utmost importance. It is, therefore, recommended that every State should have a 'Watch and Ward Service' as an integral part of the development or extension staff of the Agriculture Department. The members of this service should scout about and warn the farmers about the various pests and diseases which are already in the field in small numbers or are likely to occur in future and demonstrate the measure which can be readily taken by the farmer himself without waiting for an expert to come.

It is, however, necessary that this 'Watch and Ward Service' should be in a position to assist the farmer in carrying out actual control operations requiring technical supervision. Instead of merely telling the farmers to purchase spraying material and machinery this Service should possess the requisite equipment for lending to the farmers on hire, if necessary, so that operation may be carried out at the right time.

Legislation like Agricultural Pests and Disease Acts for controlling plant-diseases should also be resorted to. The legislation to be effective should be rigidly enforced. Although the introduction of pests into India is guarded against by an all-India Act, the Destructive Insects and Pests Act II of 1914 lays down that all living plants must be fumigated at the port of entry.

Biological control should be tried by breeding insect parasites. It has been held by the experts that insect pests, that prey upon crops are themselves preyed upon by smaller insects and it has long been realised that these parasites might be utilised for keeping them in check. The possibility is extremely attractive in principle. One has only to find the parasite, breed it in sufficient numbers and let it loose in the field, where it proceeds to prey upon the pests reducing it to impotence. Experiments are being tried in Madras, Mysore and Travancore with *rodolia* parasite pest which preys upon the wheat-rust. Plant protection work is being carried on at present in U. P., Bombay, West Bengal, Orissa, and Coorg. The Central Government had created in 1947 a Plant Protection Quarantine and Storage Organisation to help in saving crops which are destroyed by insects, pests and plant diseases.¹

|| A vast amount of experimental work has been done in the subject by some of the ablest Entomologists in the world, and some striking successes have been obtained in Canada, Newzealand, and Hawaii Island, etc. On the other hand, in the U. S. A. the expenditure of millions of dollars introducing parasites has failed to bring any success.² /

|| The biological control should be pursued with the following objects³ :—

1. The compilation of available information,
2. The introduction of foreign parasites,
3. The study of indigenous parasites for transfers from one part of the country to the other, and
4. The prevention of practices by which useful insects are destroyed, thus leading to an increase in certain pests, and the encouragement of practices which will favour the spread of useful parasites. /

The functions of this organisation are to control the plant diseases and flying pests like locusts, to advise and organise plant protection service, to provide personnel and medicines to enable the state keep up their struggle for agricultural improvements, to prevent the import of foreign diseases and pests, to act as an inter-state exchange for information on plant diseases and pests and to organise research on discovery of parasites and pests living on undesirable plant-pests.

² Sir John Russel, *Op. Cit.*, p. 50.

³ *The Famine Enquiry Commission Report*, p. 162.

In order to protect crops from wild animals and vermins the best thing is to make fence round the fields but owing to poverty of the peasants fencing is costly. Hence for killing these concerted action would be the most effective protection.

—Technical Research

The survey of crop improvement cannot be complete without considering the part research has played in making these improvements possible. We may discuss the problem of research under three heads : *viz.*, (i) acquisition of scientific knowledge by specialised research and study ; (ii) experimentation of the same with a view to demonstrating new methods and results of scientific knowledge on the experimental farms and stations under conditions approximate to those found in rural life ; and (iii) dissemination of the results thus obtained as widely as possible among the cultivators, who are the real parties concerned.

(i) The scientific knowledge is acquired either at the Universities or at the Technical Institutes. Unfortunately the number of such institutions, in view of the large population and increasing demand, is not enough. Moreover, majority of them are only examining bodies which have done more literary and academic work rather than concentrated on technical research of a practical nature. Hence, there is a paucity of experts to deal with the different aspects of the problem.

Indian Council of Agricultural Research was set up in 1929, on the recommendations of the Royal Commission on Agriculture, to promote, guide and co-ordinate agricultural research throughout India. The Council's Advisory Body consists of experts, representing the States, the universities and scientific bodies, while the Governing Body is composed of the State Ministers of Agriculture and the representatives of the Parliament and commercial interests. In 1951, I. C. A. R. was completely reorganised to enable it to discharge its responsibilities more effectively, especially in the field of extension work. Steps have been taken to set up an Extensive Service on a national level to bridge the gulf between the research workers and the farmers.

The I. C. A. R. has been experimenting on the possibilities of the production of selected hybrid maize seeds for large-scale industries. As a result of the rice-breeding experiments, a number of varieties resistant to attacks by various pests and diseases and giving high yields have been evolved. A new variety of wheat N. B. 809 has been evolved. It is the first Indian strain resistant to all the three types of wheat rusts and suitable for the hills. Promising results have been obtained by research workers who are trying to evolve high yielding varieties of millets, pulses and tubers resistant to parasitic weeds.

Besides co-ordinating and guiding research, the Ministry of Food and Agriculture maintains a number of Research Institutes. The research and extension activities of the Ministry are carried out through the I. C. A. R., the various Central Research Institutes and the Central Commodities Committees. In 1953-54 the, I. C. A. R. sponsored 128 research schemes in agriculture, animal husbandry, statistics, etc., involving a total cost of Rs. 44 lakhs.

The Important Research Institutes are :

1. *The Indian Agricultural Research Institute* at Delhi, conducts research in basic problems of all-India importance as soil fertility and improved varieties of seed which can resist drought, disease, insects and pests and adapt themselves to different types of soil and climate. The Institute provides post-graduate training course.

2. *The Central Rice Research Institute*, at Cuttack carries out trials and research on the agronomy, mycology, entomology, botany and chemistry of rice. The multiplication of improved varieties of rice and experiments in green manuring and in new methods of transplantation are some of its other functions. The Institute has also been selected by the F. A. O. as the venue for an international rice breeding course.

3. *The Central Potato Research Institute*, Poona, is engaged in evolving improved varieties of potatoes capable of giving high yields. Under a five year scheme for co-ordinated development, it is proposed to form a Central Pool of disease-free potato seeds which will be maintained and multiplied in suitable places in the hills and the plains.

4. *The Central Vegetable Breeding Station*, Kulu, is continuing investigations on self-fertilised seeds and the manipulation of agricultural practices to secure increased production.

5. *The Forest Research Institute*, Dehradun, is engaged in research in silviculture, botany, entomology, the seasoning and preservation of wood, timber mechanics, cellulose and paper chemistry, and other forest products.

6. *The Indian Veterinary Research Institute* at Izzatnagar, is small bacteriological laboratory. It has six main research divisions and four auxiliary sections. In addition to research, the Institute undertakes the manufacture of vaccines and provides training for students.

7. *The Indian Dairy Research Institute* at Bangalore trains the students for a diploma course in dairying, and conducts research on dairy problems. It is also engaged in the development of pedigree herds of Red Sindhi and Gir cows. There are two cattle farms at Karnal and Coimbatore, and a creamery at Anand.

8. *The Indian Lac Research Institute* at Namkum is engaged in fundamental and applied research in entomology and chemistry.

There are also three fisheries research stations at Barrakpore, Mandapam and Bombay.

Commodity Committees

The Indian Central Committees for cotton, jute, oilseeds, sugarcane, cocoanuts, areca-nuts and tobacco operate and subsidise a number of research schemes to various stations and sub-stations. These committees are financed by proceeds of a cess levied on a particular commodity.

1. *The Indian Central Cotton Committee* has been trying to evolve suitable strains of long-staple cotton and to popularise it in the country

2. *The Indian Central Jute Committee* undertakes research and extension work on jute through (i) the Jute Agricultural Research Institute, (ii) the Technological Research Laboratories, (iii) the Economic Research Section, and (iv) the Publicity Section.

3. *The Indian Central Oilseeds Committee* aims at assessing the relative nutritive values of oil-cakes obtained by the expeller and *ghani* processes.

4. *The Indian Central Sugarcane Committee* conducts research in sugar technology, renders technical assistance to factories and trains students.

5. *The Indian Central Coconut Committee* has two research stations at Kasaragoad and Kayangulam and four regional stations (three in Travancore-Cochin and one in Orissa) which conduct research on the coconut.

6. *The Indian Central Areca-nut Committee* subsidises a number of research schemes. The regional areca-nut research stations in Mysore, Travancore-Cochin and south Kanara have been started with the help of the Committee.

Besides these institutions, there are 23 Agricultural Colleges affiliated to the various Universities.

(ii) As regards the work done by the agricultural experiment stations it may be pointed out that though a number of such stations exist all over the country but unfortunately their work has not been very fruitful. In view of the fact that the Indian experimental stations have been functioning for so many years it seems at first surprising that so little of the work done has found its way into the general body of agricultural science as expounded in

the standard treatises. The work has been really confined to the laboratory and the experiment station, It has not been brought into living, organic relationship to the work on the fields.

(iii) With a view to advancement of research and the efficiency of agricultural production, it is essential that the discoveries made and the conclusions arrived at in the various spheres of Indian Agriculture should be compiled and made available to the rural areas in a convenient and accessible form. "In this connection Sir John Russell rightly emphasised that, It should be impressed upon the staffs at the experiment stations that they have a responsibility to the cultivator, that they must not shelter within four walls of the laboratory in the hope that somehow their work may find practical application; they must make the field and the crop their centres and as early as possible set out experiments on the cultivator's land so as to widen the scope of their enquiry. They should be expected to carry out simplified form of their experiments on a cultivator's land unless there be good reasons to the contrary."

BOOK TWO
RURAL FINANCE, CO-OPERATION
AND
MARKETING

16. Rural Indebtedness.
17. Rural Finance.
18. Co-operative Movement in India.
19. Evaluation and Reorganisation of the Co-operative Movement.
20. Long Term Agricultural Credit.
21. Agricultural Marketing.
22. Agricultural Marketing (Contd.)—Lines of Improvement.
23. Agricultural Price Structure in India.
24. Co-operative Marketing.

CHAPTER 16

RURAL INDEBTEDNESS

Rural indebtedness is one of the burning and pressing problems of India. The prosperity of this country depends fundamentally on agriculture, for more than $\frac{3}{4}$ of its inhabitants are engaged in this industry. But, as a matter of fact, agriculture is not making any progress due to heavy indebtedness of the cultivators and as a result of this Indian agriculture is backward and this stultifies all talks of agricultural improvements. An effective solution of the problem of rural indebtedness is the first step of our economic progress. The debt is unproductive and its burden accumulated from generation to generation. A productive debt creates its own means of payment; but an unproductive debt becomes a great burden as much as the principal and interest go on increasing. Indian agricultural debt in that sense is a great curse to the cultivators. According to Wolf, "The country is in the grip of Mahajans. It is the bonds of debt that shackle agriculture."

Estimates of Rural Debt

Indian peasant

Estimates of Indian agricultural debts were made from time to time. No scientific and systematic treatment of the disease was attempted till the seventies of the last century when the indebtedness of the Deccan ryots, who had been the victims of great vicissitudes of fortune almost since the conquest of the Deccan rose to such magnitude as to demand prompt legislative action.¹ The Deccan Ryots Commission in 1875, concluded that $\frac{1}{3}$ of the occupants of Government land were in debt and that the average debt per occupant was Rs. 371.² According to the Famine Commission of 1880 and 1901, at least $\frac{4}{5}$ of the cultivators were in debt and were fast losing the possession of their lands.³ In 1911, Edward Maclagan estimated the total agricultural debt of British India at Rs. 300 crores,⁴ while in 1923 Mr. Darling estimated it at Rs. 600 crores.⁵ On the basis of the estimates of the Provincial Banking Enquiry Committees, the Indian Central Banking Enquiry Committee in 1934 put the figure of total rural indebtedness of India at Rs. 900 crores. During the slump the burden of debts became twice as heavy as

1 S. C. Ray, *Agricultural Indebtedness in India*, p. 3.

2 Deccan Ryots Commission Report, p. 29.

3 S. C. Ray, *Op. Cit.*, p. 21.

4 Bombay Banking Enquiry Committee Report, p. 53, (F. N.)

5 M. L. Darling, *The Punjab Peasant in Prosperity and Debt*, (1932), p. 18.

the cultivator's income 'was reduced by half. Since then it has increased considerably and was estimated at Rs. 1,200 crores in 1935 by Dr. P. J. Thomas. "If the total agricultural debt of British India was about Rs. 900 crores in 1929-30, it must have increased to about Rs. 1,200 by 1923, and the real burden must be tantamount to Rs. 2,200 crores, assuming that prices fell by 50 per cent (between 1929 and 1933), that no payments of the principal has been made and that interest payment is in arrears so that the debt has accumulated further."¹ The immediate effect of the agricultural depression of the early thirties was to intensify the burden of debt and to increase it not only in real terms but also in money-terms.²

The Agricultural Credit Department of the Reserve Bank of India in a survey of the position in 1937 notes that the burden of this indebtedness has become really much more crushing than can be judged from a comparison of the growth of its volume in rupees owing to the great depression (1929-32) attended with falling prices of agricultural produce. They put it at Rs. 1,800 crores. The annual interest on these on the lowest computation would be above Rs. 100 crores. To these may be added canal rates (about 12 crores), Central and Provincial taxation (about 100 crores), local taxation (about 150 crores) and railway freight charges (Rs. 65 crores). Precious little is, therefore, left to feed the cultivators. During the II War, the substantial cultivators and big landlords everywhere repaid their old debts either in full or to a material extent. For India as a whole the real rural debts and also the total money burden have become lighter during war years. The regions and classes that have failed to profit from the unprecedented rise of prices of agricultural produce have evidently done so because of structural defects in their economies such as uneconomic holdings.

It is difficult to arrive at an estimate of the total all-India debt in view of different conditions prevailing in different States. But on the basis of Madras Enquiry made by Dr. Naidu, if the same proportion of debt is applied to the whole of the country on the population basis, the total rural debt in 1945 would work out at Rs. 1,300 crores and if an allowance is made for the loss of area to Pakistan and differences in condition of different States are ignored, the estimate for the whole of Indian dominion would be round about Rs. 1,100 crores. The First Report of the National Income Committee estimates the rural debt at Rs. 913 crores, of which about 83 per cent is non-productive and only 5 per cent of which is supplied by Co-operative Societies. The interest on this debt is estimated at Rs. 86.5 crores. S. Thirumalai thinks it safe

1 P. J. Thomas, *Economic Problems in Modern India*, Vol. I, (1939), p. 176.

2 D. R. Gadgil, *Agricultural Finance Sub-Committee, Report*, (1943), p. 6.

to assume that the debt position is at the same level as in 1937, roughly at Rs. 1,800 crores.

Various estimates arrived at of the Rural Indebtedness may now be summarised as followed :—

Estimated by	Year of enquiry	Amount of indebtedness in rupees	General remarks
<i>Pre-Independence</i>			
The Deccan Ryots Commission ...	1875	371 per occupant	Based on analysis of 12 villages in the Ahmednagar District (Bombay), one-third occupants of Government land in debt; debt averaged 12 times the assessment.
The Famine Commission ...	1880	...	One-third of land-holding class in deep debt; another one-third in debt, but with power to redeem debt.
Sir Frederick ...	1895	45 crores	... Of Madras only.
The Famine Commission ...	1901	...	One-fourth lost their land in Bombay. Less than 1/5 free from debt.
Sir Edward Maclagan ...	1911	300 crores	... For British India on the basis of Sir Nicholson's estimate for Madras.
M. L. Darling ...	1925	600 crores	... Based on the Punjab figure of 90 crores; 19 times the assessment, but taking 17 as the multiplier.
The Central Banking Enquiry Committee	1929	900 crores	... Based on Provincial Banking Enquiry Committee Reports.
P. J. Thomas ...	1933	2,200 crores	—
Dr R. K. Mukerji ...	1935	1,200 crores	—

Estimated by	Year of enquiry	Amount of indebtedness in rupees	General remarks
Agricultural Credit Depart- ment	... 1937	1,800 crores	—
Mr E. V. S. Menon	... 1938	1,800 crores	
<i>Post-Independence</i>			
Dr. N. S. Naidu ...		1,100 crores	For whole of Indian Union.
National Income Committee	...	913 crores	,,
S. Thirumalai	...	1,800 crores	,,

Debt Position in the States

Dr. Harold Mann remarked about the Bombay Presidency, "This enquiry into the conditions of the people of a typical dry Deccan village is disheartening. The debts are a crushing debt on the people." He estimated that the average debt of the cultivator of a Bombay village is Rs. about 130. In Bengal it was calculated by Mr. Jack that in the District of Faridpur 45 per cent of the cultivators were in debt, and the average debt of each family was about Rs. 121. In Bengal during 1943-44 the percentage of families in debt increased from 43 to 66 per cent for Kisan families, 27 to 36 per cent for craftsmen and 17 to 46 per cent for all other miscellaneous classes of people. In Southern India in the Cochin State Dr. Slater pointed out that nearly 75 per cent of the agriculturists were in debt. Recent enquiry by Dr. Narainswamy Naidu in 1945 in the Madras State revealed that there has been an increase in the indebtedness of the petty landlords, tenants and agricultural labourers. In Punjab it was pointed out by Mr. Darling that only 17 per cent of the people are out of debt, and the average debt per indebted proprietor is Rs. 463. The U. P. Provincial Banking Enquiry Committee estimated the total debt of the landlords, peasants, proprietors and tenants in the whole province at Rs. 124 crores, while according to U. P. Government the agricultural debt of the province has been estimated at Rs. 186 crores. Dr. Agarwal in an enquiry in 6 villages of U. P. in 1954, found out that the percentages of indebted families was as high as 72.9; and the debt per indebted family was 213.9 Rs.; and the percentages of indebted families is highest in the size-group of holdings below 2 acres.

1 G. D. Agarwal, *Role of Moneylenders in Agricultural Finance*, in *I. J. of Agricultural Economics*, Vol. I, No. 1 (March 1955), p. 139-40.

Indebtedness during War and Post-War Period

It is generally believed that the rise of agricultural incomes from Rs. 953 crores in 1939-40 to Rs. 2,660 crores in 1947-48, because of the heavy rise in prices specially of agricultural commodities during the war and post-war period, has led to a shift in the distribution of national income from urban to rural areas through agricultural prosperity. This has enabled the cultivators to reduce or wipe off their debts. The view is also supported on the grounds of repayments made to Co-operative Societies and Land Mortgage Banks, large number of redemptions of old mortgages, etc.

No reliable data are available regarding this so-called agricultural prosperity, as few enquiries have been made in this connection, the results of which throw light on this problem.

In Bombay, the Provincial Co-operative Institute made a survey of the indebtedness of the farmers in the Karnatak and Deccan regions of the Bombay State. Their enquiry revealed that during 1939-44, there was a reduction of debt in both the regions though not to the same extent. Generally the reduction was considerable among cultivators of large holdings going up to 50 per cent while in the smallest holdings of less than 5 acres, the extent of reduction was small. In the same tracts there was an increase of debt ranging from 9 to 30 per cent. In Madras Dr. Naidu showed that the total debts of the Province which stood at Rs. 272 crores in 1939 was reduced to Rs. 218 crores in 1945 or about 20 per cent. Per Capita debt had fallen there from Rs. 51 in 1939 to Rs. 40-8-0 in 1945.¹ But the major part of the benefit indicated by the reduction of debt was confined to the larger and medium holders while the position of small holders remained practically the same and that of the tenants and labourers actually worsened.

In Bhuvil village an enquiry was conducted under the auspices of the Indian Society of Agricultural Economics. It revealed that the total indebtedness of the village fell from Rs. 2 lakhs before the war to Rs. 1·2 lakhs in 1945-46 and the present debt in terms of pre-war rupee value is said to be only 15 per cent of the pre-war debt.

The Congress Agrarian Reform Committee concludes from the statistical data based on the personal investigations of Prof. Vir Bahadur Singh in 1945 into representative regions of U. P. that "by and large the agricultural community has not gained

¹ B. V. Narainswamy Naidu, *Report of the Economist for Enquiry into Rural Indebtedness*, (1946), p. 57.

any advantage from the war-time boom and though the real burden of indebtedness might have been reduced the money burden has not been reduced.”¹

On the question of the impact of war-time boom on rural debt—the Gadgil Committee concluded that the outstanding advances made by the Government in 1944 were lower than in 1939, that over-dues of Co-operative Credit Societies were reduced substantially, that advances made by them were smaller than before the war, and that amounts of repayments were considerable, “it might be possible to hazard the opinion that the total indebtedness in terms of money stood in 1944 at a level lower than that in 1939 ; but that, at a later date, forces were already in operation leading to an increase in the amount of this total indebtedness. The upward trend in the prices of agricultural products appeared to be held in check. The rise in the level of agricultural costs had mostly caught up with increase in the prices of agricultural products and had in some instances even passed it.”²

The Famine Enquiry Commission is also of the view that there was a considerable reduction in rural indebtedness between 1942 and 1945, especially in the case of big and medium land-holders, but the indebtedness of the small holders has remained more or less unaffected in many parts of the country.³

But on the basis of repayments to Co-operative Societies and Land Mortgage Banks, large number of redemptions of old mortgages and declining number of suits and foreclosures, the general inference which is drawn, is that in most States the debt decreased in volume in 1943-44. But since then an upward trend was evident because of the fact that the rising trend in agricultural prices after 1945 was kept in check by procurement and other control measures. The total indebtedness decreased in 1944 as compared with 1939 but forces were already in operation in the period leading to an increase in the amount of this indebtedness. “The rise in the level of costs had mostly caught up with the increase in the prices of agricultural produce and had in some instances even passed it. The margin of profit which had during the period 1941-44 led to liquidation of old debts had distinctly shrunk.” So observes the Rural Banking Enquiry Committee that since 1945 “Fresh borrowings as well as outstanding have tended to increase rapidly.”⁴ Moreover, the improvement in the

1 *Agrarian Reforms Committee Report*, p. 91.

2 *Agricultural Finance Sub-Committee Report*, pp. 7-8.

3 *Report*, pp. 299-300.

4 *Report*, p. 36.

debt position noticed during the war period, 1939 to 1945, because of the higher prices in agricultural commodities, was mostly confined to the small section of the big landholder who were served by the organised sector of the credit machinery in the country. The average ryot had not been benefited substantially. While it is not clear small agriculturists with uneconomic holdings have derived any real benefit from the rise in prices, the substantial cultivators and big landlords have everywhere repaid their old debts either in full or to a material extent. Taking India as a whole, although, real rural debts and also the total money burden appeared to have become lighter, the spread of the liquidation of debts cannot be estimated for the various classes of producers.¹

In the Sarvodaya Area of Ratanagiri District Bombay, the number of indebted families increased by 15 per cent at the end of 1948 as compared with the beginning of the year, and the debt per family increased by 16·7 per cent.²

In Mysore, the total debt increased from Rs. 95·07 lakhs in 1941 to Rs. 76·98 lakhs in 1945 or by 37·3 per cent. In Bengal the percentage of families indebted rose from 31·4 in 1943 to 60 in 1946 while the debt per family rose from Rs. 87·6 to Rs. 158·0³

According to Dr. G. D. Agarwal, in fourteen villages of the U. P. while there was a decrease in the number of indebted families and the total amount of debt in 1949 in comparison with 1939, the average debt per family increased in all the groups of the landholders. The per capita debt rose from Rs. 93 in 1939 to Rs. 143 in 1949 in the case of landlords owning less than 2 acres.⁴

Further the loan transactions of the Agricultural Credit Societies and Land Mortgage Banks showed that repayments were heaviest in 1942-43, but lower in 1945-46 and further declined since then. Fresh advances in the Agricultural Societies went up in 1947-48 by nearly 21 per cent over the pre-partition figures.

The above account clearly reveals that agricultural indebtedness has again increased considerably since 1945 and that this increased burden of rural indebtedness has mostly fallen upon the low-income groups, viz., small holders, tenants and agricultural labourers.

1 *Report of the Agricultural Finance Sub-Committee*, p. 8.

2 Thirumalai, *Op. Cit.*, p. 186.

3 "The burden of the agricultural debt of the State is again on the upgrade and has reached its pre-depression (1929) peak."—K. M. Mukerjee, *Indian Journal of Economics*, April 1919, p. 375.

4 G. D. Agarwal, *Reorganisation of Agricultural Credit*, pp. 88-89.

To pronounce, therefore, that a material reduction in the size of debt of the agricultural community has taken place during the war time is absolutely baseless. On the other hand, the recent surveys make it clear that whatever reduction took place during war period, has been offset by an increase in debt since 1945.

Observations of the Rural Credit Survey Committee

According to the findings of the Committee the level of debt per rural family for all districts together was as high as Rs. 283. This level was regarded as being unusually high, for, during the year covered by the Survey, there was a large increase in the debt level for various reasons, such as fall in agricultural prices and failure of crops. The increase during the year was estimated at no less than 69 per cent for cultivators, 61 per cent for non-cultivators, and 68 per cent for all families.

Another important conclusion is that about 63 per cent of the rural families were found to be in debt. But the level of debt and the proportion of indebted families were Rs. 364 and 69 per cent respectively, in the case of cultivators as against Rs. 129 and 52 per cent, respectively, in the case of non-cultivators.

The burden of debt was much higher on cultivators with smaller holdings as compared to cultivators with larger holdings. But, in most cases, the level of debt, though high in absolute terms, was, in average terms, moderate in relation to the value of assets for all classes of cultivators. For instance, for the country as a whole, outstanding debt was only 5.1 per cent of the value of total assets for the upper strata cultivators and 8.7 per cent for the lower strata cultivators.

The study discloses that a persistent regional pattern has been in evidence for the last two decades in the levels of debt per family. Thus, while the three eastern States, namely, West Bengal, Assam and Orissa, held a low position in the burden of debt per family in both 1929-30 and 1951-52, the States of the Punjab and Bombay, were seen to be high debt States in both the periods. In Madras and U. P., on the other hand, the increase in debt in monetary terms during the period 1929-30 to 1951-52 was significantly large. During the Second World War, in particular, not only was there no marked increase in the money burden of debt, but there was actually a reduction in the real burden of past debt, as a result of the changed value of money.

The survey further reveals that, for all districts together, about 59 per cent of the cultivating families borrowed during the year covered by the Survey. While the average amount borrowed per family during the year was Rs. 210 in the case of non-culti-

vators, the borrowings of the big large cultivators were, however, substantially higher than those of the medium and small cultivators. The amount so borrowed varied between Rs. 528 for the 'big' cultivator and Rs. 111 for the 'small' cultivator.

Indebtedness of the peasant had been in the past also, but it has increased appreciably during the nineteenth century with the rise in prices and land values, the establishments of the Civil Courts and the enactments of the Civil Procedure Code and the enforcing of the individual rights in contracts. It is rather very striking to note that the indebtedness of the peasantry in spite of the great improvements in communication, trade, irrigation and maintenance of peace and security has rather increased than decreased and it apparently seems paradoxical to say that the peasants had become prosperous prior to recent depression than before. But as history reveals indebtedness and prosperity are not necessarily inconsistent, the only explanation of this phenomenon is that indebtedness still exists in rural India, not in spite of these improvements but just because of them. It is no wonder that the small rural farmer is in no better position today financially than he was before the war, despite the steep rise in agricultural prices, but along with the rise in prices there has also been a rise in the prices of consumers' goods and also in the cost of cultivation including wages, prices of cattle, implements, etc. Moreover, not all the benefit of rising prices has gone to the cultivator.

Analysis of Debt

The Reports of almost all Banking Enquiry Committees and of various other enquiries conducted into indebtedness contain some analysis of the purposes for which and the time on which debts had been contracted. In this connection the percentages of the total debt for which it was contracted for some of the States are given below :—

1. Bihar and Orissa Banking Enquiry Committee gives the figures as :—

Repayment of earlier debt 18 ; social occasions 19 ; maintenance, house-building and repairs $16\frac{1}{2}$; rent 6 ; cultivation and purchase of seeds and manures 7 ; purchase of cattle and improvements 8 ; Non-payment of interest 12 ; litigation purchase of land and trade 9 ; unclassified $4\frac{1}{2}$.

2. Central Provinces and Berar Banking Enquiry Committee gives these figures as :—

Old debts and loans 26·0 ; marriage and other ceremonials 14·0 ; maintenance expenses including results of scarcity and distress 7·0 ; land revenue and rent 4·0 ; cultivating expenses including wages of labourer, purchase of cattle, seeds, manure, etc.

23.0 : improved agricultural implements 1.0 ; field embankment and other land improvements 10.0 ; purchase of land 11.0 ; litigation 2.0 ; business, etc., 2.03.

3. For 141 villages in the Madras, Mr. Sathianathan gives the following figures :—

Payment of prior debt 25.1 ; marriage and other ceremonials 10.5 ; payment of land revenue 3.3 ; relief on distress 6.1 ; agricultural expenses 10.0 ; improvements of land 4.4 ; education of children 1.4 ; trade 12.9 ; purchase of land 13.8 ; construction of houses 5.6 ; other expenses 6.9.

4. In Punjab the Banking Enquiry Committee summarises the results of surveys of indebtedness in the five villages as follows :—

Purchase of cattle from 15 to 39 ; repayment of old debts 2 to 23 per cent ; marriage and funeral 12 ; agricultural expenses 10 ; domestic expenditure and litigation varies from 2 to 13.

5. The average results of three villages in Dharwar District according to the Bombay Banking Enquiry Committee was as follows :—

Current agricultural needs 17.6 ; land improvement and purchase of land 8.0 ; domestic requirements 11.4 ; payment of old debts 20.7 ; trade 4.1 ; marriage and other ceremonials 19.4 ; litigation 14.8 ; miscellaneous 4.0.

6. Similarly the debts of 52 families of Karimpur village in Bogra district in Bengal, for 1928-29 show the following causes of indebtedness¹ :—

For payment of old debts 14.3 ; purchase of cattle and capital and permanent improvements 40.0 ; land revenue 21.0 ; cultivation expenses 18.1 ; special and religious purposes 5.5 ; litigation 0.6 ; and other purposes 2.4.

7. Dr. Agarwal, speaking about 1,088 families in 14 villages in U. P. concludes the percentages of rural indebtedness as follows² :—

Social ceremonies 37.7 per cent ; domestic needs 12.5 per cent ; current agricultural needs 3.1 per cent ; loans for purchase of cattle 28.2 per cent ; repayment of old debts 4.8 per cent.

According to the Rural Credit Survey Committee, of the total borrowings by rural families, about half was for family expenditure, slightly more than a quarter for capital expenditure on farm and the balance for current expenditure on farm, non-farm business expenditure and other expenditure. As between cultivators

¹ *Central Banking Enquiry Committee Report*, p. 72.

² Dr. G. D. Agarwal, *Reorganisation of Agricultural Credit*, p. 92.

and non-cultivators, the emphasis on the purposes varied. Thus, whereas among non-cultivators family expenditure accounted for nearly 70 per cent, non-farm business expenditure for a fifth, and other expenditures for the balance of the total borrowings, among cultivators family expenditure accounted for nearly 47 per cent and capital expenditure on farm for 32 per cent of the total borrowings.

As is well known, agencies like Government and co-operatives give credit largely for certain purposes approved by them, especially for productive purposes. It is, therefore, important to note to what extent, the cultivator's dependence on private agencies for production credit has been minimised, by the part played by Government and Co-operatives.

The details as supplied by the Rural Credit Survey Committee are given in the table below¹ :—

Borrowing of Cultivators classified according to purpose and duration—India

Purpose-duration	Amount borrowed for the purpose-duration from the agency as per cent of the total borrowings for the purpose-duration			
	Government	Co-operatives	Others ²	Total
Agricultural :				
Short-term	2·8	11·3	85·9	100
Long-term	6·0	2·4	91·6	100
Non-Agricultural				
Short-term		0·5	99·5	100
Long-term	0·6		99·4	100
Consumption :				
Short-term	2·1	2·2	95·7	100
Long-term	1·0	0·9	98·1	100
Repayment of old debts	0·8	8·7	90·5	100
Others	0·8	2·4	96·8	100

It is apparent from the table above that for more than 80 per cent of short-term agricultural credit and for more than 90 per cent of long-term agricultural credit, the cultivators have to depend on the private agencies.

In the broadest terms, the needs to satisfy for which finance is required could be related either to (i) conduct of productive

¹ *Rural Credit Survey Committee*, Vol. II, p. 168.

² Including Commercial Bank, agriculturists, moneylenders and landlords, Professional moneylenders and traders, Commission agents.

activity at normal levels of efficiency which will mean finance directly for annual production needs such as that for seeds, manure, wages, etc., or for production needs such as those for livestock, implements, etc., or for payment of rent, revenue and current consumption finance (that for food for the family), or

(ii) *development of conservation of resources.* Improvements such as construction of wells, tanks and embankments of tree or orchard planting would fall under this category, or

(iii) *circumstances or calamity or distress occasioned* by the incidence of famine or flood or any other calamity.

The following table gives the purposes of loan to which the finance drawn from private agencies is put¹ :—

	Productive	Non-Productive	Unproductive
India (R. C. S.)	28	50	32
India (Ag. Reforms Committee)	27	61	12
Saurashtra (1949-50)	26	35	39
Hyderabad (1949-50)	57	3	40
Maharashtra (1949)	2	81	17
Gujrat (1954)	40		60

Causes of Indebtedness

1. *The Ancestral Debt.* The most important and the chief cause of the existing indebtedness is the ancestral debt, which is handed over from father to the son, generation after generation without any equitable restrictions. Many agriculturists start their career with a heavy burden of ancestral debt and drag the loan for the whole of their lives, taking it to be a religious and social obligation, with the result that the burden goes on increasing and becomes hereditary. As Agriculture Commission in India remarks : "The Indian peasant is born in debt, lives in debt, dies in debt and bequeaths debt." Thus an Indian cultivator takes birth as a debtor, lives as debtor and dies as debtor.² In fact the people are so accustomed to be in debt to take it over from their fathers and to pass it on to their sons, that they accept indebtedness as a settled fact, and a natural state of life.

2. *Sub-division and Fragmentation of Holdings.* When the holdings are small, the cultivation ceases to be economical even in the best of years and the yield from land becomes insufficient for the maintenance of the farmer and his family. On account of this reason either the farmer must go in debt or must be very indus-

1 M. B. Desai, *Private Finance in Agriculture*, I. J. Agr. Econ. Vol. X. Ibid., p. 148.

2 Royal Commission Report on Agriculture, Para. 365.

trious or must have any other source of income. In this connection it would be interesting to quote Mr. Darling who remarked, "That to support a family upon a few acres without getting into debt requires a love of skill, industry and thrift seldom attained in a hot country. Undoubtedly it can be done just as a small sailing boat weathers a storm of the Atlantic, but unless the boat is both well found and well manned it will assuredly sink. In India the farm is too often neither the one nor the other, and nature can be almost as destructive on land as at sea".¹ The holdings are so small and the margin of safety so narrow that any misfortune may plunge the peasant into debt from which he can never extricate himself.

3. *Vagaries of the Climatic Conditions and Other Calamities.* India is subject to frequent failure of rains and the resultant famines. The frequency of failure of crops due to drought or floods, hailstorms, conflagration, the uncontrollable swarms of locusts, all these damage the agriculture and show poor results which cause endless miseries to the cultivator, having no reserves to fall back upon in times of distress, and hence he becomes the prey of moneylender. It has been found that in a cycle of 5 years one year is good, one bad and three indifferent (neither good nor bad). It is only in good year that the ordinary small-holder can possibly keep himself out of debt.² To a farmer there is no calamity greater or more severe than the total or partial failure of crops, when the rain fails there is nothing but complete bankruptcy in store³, in the bad years he will borrow for nearly everything he wants, for seed, for cattle, clothing and even for his food.

4. *Ignorance and Illiteracy of the Cultivator.* Illiteracy forms one of the principal obstacles to his progress. Suffice it to say that owing to his ignorance and illiteracy, he is being everywhere cheated both in private and public life. They easily fall into the clutches of the shrewd and intelligent moneylender owing to their simplicity and ignorance. It has been said, "The money-lender is tempted to borrow, the lawyer to quarrel and the trader to waste." Prof. Wadia says, "Having no additional source of income the ryot continues to borrow in out and of the season thinking to mitigate the heavy load of indebtedness. As a consequence the increase in rural indebtedness has been parallel to the growing loss of economic equilibrium brought about by the pressure of population on the land and decline of subsidiary occupation."⁴

5. *Failure to provide for Deficiency.* Agriculture is subject to the law of diminishing returns and in absence of manures and

¹ Darling, *Peasantry in Prosperity and Debt*, p. 262.

² Darling, *Op. Cit* p. 27.

³ Baroda Banking Enquiry Committee Report, p. 34.

⁴ Wadia and Joshi, *Wealth of India* p. 279.

fertilisers to check constant soil exhaustion, improved seeds and methods of cultivation, the produce of land goes on decreasing. The extreme poverty of the cultivator and low yield of his tiny plot prevents him from providing against depreciation because it is difficult to put aside funds for depreciation of cattle and improved seeds when so desirable things are lacking in the household. In fact taking into account uncertainties of weather, the frequency of cattle mortality, and the fickleness of prices, agriculture especially cereal-growing, is not a paying business, and if the Indian ryot sticks to it, it is not because it is profitable, but because it is a mode of life with him.¹

6. *Small Income of the Cultivator and his Physical Inefficiency.* The income of the cultivator is very small. It is so small as to make it impossible for him to have most of the necessities for efficiency. According to the National Income Committee, the net output per engaged person in agriculture is only Rs. 500. Two-thirds of the people unasily get one-fourth of the minimum requirements of foodgrain. They are under-fed, under-clad, under-nurtured and the majority of them live from hand to mouth. The physical deficiency which results from these conditions make him an easy prey to epidemic diseases, which sap his stamina and vitality and this enforced illness and weakness compel him to borrow.

7. *The Moneylender and his Vicious System of Moneylending.* The agricultural capital is supplied at present mostly by the village moneylender, Mahajans and Sahukars.

From the table on page 333 it will be seen that for about 90% of the total borrowings, the rural families have to depend on private agencies. More or less similar conditions in the sphere of finance to the rural labour as revealed by the Agricultural Labour Enquiries. Of the total borrowings by labourers, 36% was contributed by professional moneylenders, 38% by friends and relatives, 21% by employers and 6% by shopkeepers and only 1% by co-operatives. Thus the private agencies are exclusive financiers to rural labour.

A large number of cultivators appears to have a running account with the Mahajan, he advances them loans, seeds giving one seer less than the market price. When the tenant falls on evil days he would advance him rent to save him from ~~ejection~~ ^{eviction}. He also lends money for the inevitable marriage and for equally inevitable law suits. He is in fact at all times the resource to which the needy agriculturists go for relief, and the consequence is that he is never out of the Mahajan's grip, i.e., they are almost the only oasis of thrift in the vast desert of extravagance and destitution and the only source from which the credit can be had, so that he is always in the clutches of the moneylender.

1 P. J. Thomas, *The Problems of Rural Indebtedness in India*, p. 6.

The table below shows the relative importance of private and institutional agencies in rural finance.

Relative Position of Different Private Agencies in Agricultural Finance

Serial No.	Region	Year to which the data relate	Coverage of the survey	Private Finance (% to total)			Total private finance (%)	Institutional Finance (% to total)		Total Institutional finance (%)	Rates of interest on private borrowing (%)
				Merchants and Professional money-lenders	Land-lords	Other Cultivators	Relatives and friends	Miscellaneous	Co-op	Taccavi	
1	Gujarat	.. 1948	16 villages	67	6	12	3	4	7	1	8
2	Maharashtra	.. 1949	Morbad Taluka	68	—	27	—	4.8	0.1	0.1	5 to 25 (12)
3	Maharashtra	.. 1949	Pandharpur and Santalukas	38	—	37	—	24	10	—	1 to 37½ (6, 12, 24)
4	West Bengal	1949-50	.. ..	28	—	32	—	28	5	7	12
5	Saurashtra	.. 1950	34 villages	40	3	16	23	2	4	12	16
6	Hyderabad	.. 1950	118 "	—	—	90	—	—	6	4	10
7	Karnatak	1952-53	10 "	53	3	—	8	19	7	10	1 to 600 (12, 18 and 25)
8	All-India	1951-52	600 "	51	2	15	14	—	3	3	1 to 24

The figures in the brackets are of rates of interest that are normally charged.

*The balance of 3 per cent is from Commercial Banks and miscellaneous sources.

8. *High Rate of Interest.* The high rates of interest also compel the cultivators to borrow. The rates vary from State to State but on account of the weakness of the peasant's economic position the interest accumulates every year. The rates vary from 9 to 12 per cent in Madras on secured and from 18 to 24 per cent on unsecured loans; 25 to 50 per cent in Bihar, Orissa and Assam. The Bombay Enquiry Committee has given the sowcar's rates for different tracts in Maharashtra (irrigated tracts) 12 to 34 per cent : Maharashtra (famine tract) 18% to 36 per cent ; Gujrat 9 to 18 per cent. The common rates on secured and unsecured loans in Bihar and M. P. are 15 to 18 per cent and 10 to 15 per cent respectively. According to U. P. Committee the rate for secured loan varies from 6 to 18 $\frac{3}{4}$ per cent (12 per cent being the most common figure) and for unsecured loan vary from 18 $\frac{3}{4}$ to 37 $\frac{1}{2}$ per cent (the most common rate being 24 per cent). Frequently the loans advanced are in kind either for food or for seed usually on *Sawai* or *Deorha* rates. "It is not that the agriculturist repays too little ; he often repays too much. It is the high rate of interest and the malpractices followed by the moneylenders that tend to perpetuate his indebtedness."¹

9. *Extravagant and Improvident Borrowing.* The methods in which the peasant spends his money is extremely unmethodical and baneful. He squanders his money extravagantly in unproductive consumption like social ceremonies, upon marriage, ornaments, funeral right, *sradh* ceremonies of ancestors, etc., which is often beyond the means of the cultivator. The long series of seasonal feasts, religious observances as *kathas*, as well as caste dinners on auspicious occasions have stimulated family extravagance. All these have played an important part in fostering improvement in the amount of debt.

10. *The Establishment of the Pax Britanica.* Indebtedness seems due not to the impoverished condition of the people—but rather to the increased value of land which had given the zamindar greater facilities for borrowing by improving the security he had to offer. It is pointed out that under Sikh rule the agriculturist had to pay away all his spare produce and that nothing was left on which he could borrow ; but with the introduction of a fixed cash assessment, the extension of road and rail, the opening of new markets and the rise in prices the cultivator, after meeting all his obligations, found himself with handsome balance on the security of which the moneylender was glad enough to lend. It is not only in the Punjab that an expansion of credit generally led to an inflation of debt. In Nagpur and Jubbulpore, two Districts of M. P. the rise in the value of land which followed the

¹ *Bombay Banking Enquiry Committee Report*, Para. 63.

opening up of the country by rail to the trade of the world, produced an outburst of extravagance and the standard of expenditure on marriages—reached a point which it was altogether beyond the real capacity of the land to bear except in very favourable seasons. In the Deccan, in sixties, a similar expansion of credit, this time due to a sudden rise in the value of cotton (as a result of the American War), led to much improvident borrowing.¹ More recently in Baroda and Madras debt had been increasing with the rise in the value of land, while in Burma the natural result of the rapid increase in money-income of paddy cultivator has been extravagant spending and abuse of credit.² As the Royal Commission on Agriculture remarks, "Causes which the cultivator seldom understands . . . have endowed him with credit which he did not formerly possess, and he had found it difficult to resist the temptation to relieve present necessities by mortgaging his future income and even his capital."³

11. *Litigation.* Mr. Calvert estimates that 2½ million persons attend the courts every year, either as parties or as witnesses and that three or four crores are wasted in the process.⁴ In these connections not only have the pleaders to be engaged and stamp duty and process-fees to be paid, but petty officials have to be propitiated, witnesses may have to be hired, as much to prove what is true as to establish what is false, and perhaps the support of an influential neighbour has to be gained all of which consumes both time and money. The passion for litigation adds to his poverty and unproductive debt. "It is not uncommon to hear of suits dealing with the minutest fraction of an acre being fought up to the High Court and of criminal cases involving the expenditure of thousands of rupees."⁵

12. *Heavy Burden of Land and Irrigation Taxes.* The land revenue policy of the Government has also been responsible for the indebtedness. Mr. R. C. Datta, pointed out that "land in India is generally assessed very high, and since India is greatly an agricultural country, if the soil be so heavily taxed, the people would be impoverished . . . Therefore unless provision for suspense and remission of revenue be made, the cultivators will be forced to borrow under conditions beyond control." Thus "the heavy land assessment with its rigid procedure of collection is largely responsible for the aggravation of the indebtedness."⁶

13. *The Absence of Adequate Marketing Facilities.* The money economy and higher prices ruling in the market tempts the peasant

1 *Indian Famine Commission Report*, 1880, Vol. II, p. 133.

2 *Burma Banking Enquiry Committee Report*, p. 61.

3 *Report of Royal Commission on Agriculture*, p. 432.

4 *Wealth and Welfare of the Punjab*, p. 206.

5 Darling, *The Punjab Peasant in Prosperity and Debt*, p. 76.

6 Wadia and Joshi, *Wealth of India*, p. 280.

to dispose off all his produce without any reserve at a cheaper price and in a restricted market, and the poor fellow has to borrow or to buy his food in times of need at a very high price.

The Agricultural Finance sub-Committee concluded from the sample data of the debt surveys in the past as follows :—

(1) Repayment of old debt is everywhere an important factor in the contraction of new debts.

(2) A large part is played by unproductive debt. Everywhere social and ceremonial expenditure is seen to be responsible for a considerable percentage of debt.

(3) Consumers' needs and 'distress' circumstances are seen to assume an important role in adding to total debt.

(4) Debt for improvement purpose is almost everywhere of an insignificant proportion.

The Evils resulting from Indebtedness

The chronic state of indebtedness has influenced the cultivators in many undesirable ways. Much of the evils from which they suffer are the results of the indebtedness.

(1) The low standard of living and income and the indigence and poverty of the cultivating classes are due to it. The Central Banking Enquiry Committee writes, that "amongst the classes responsible for the low standard of living of the agriculturist and the continuous impoverishment of this class, even in areas which are blessed with good season and normal crops, indebtedness must be given a high place. This low scale of income and poverty prevent an adequate application of capital in the cultivation of land, tend to lower the physical and mental vitality of the cultivators, and causes the decay and weakening of the normal fibre of the society. All these lead to agricultural inefficiency and indebtedness coming in the wake of these evils, aggravates them."

(2) Debts also prevent the orderly and profitable marketing of agricultural produce. The defective system of rural finance in which the moneylender is both creditor and the village trader leads to in orderly and profitable marketing. The indebtedness of the peasant to the moneylender compels him to sell his produce at a pre-arranged price and in a closed and isolated market lacking in competition.

(3) When large sums of money are borrowed for capital improvements or payments of old debts the period of repayment fixed in the bonds is not very long, The result is that the income of

the cultivators is utilised more for the payment of debt than .. desirable or possible and the cultivator is left with very meagre income even for his subsistence. This leads to unproductive cultivation and is very detrimental to the growth of national wealth.

(4) The indebtedness causes a loss of property and transfer of land from cultivators to non-cultivators, which is fraught with grave economic and social consequence for the future of the country. The areas held by non-agriculturists have shown an increase in recent years. The area gained by agriculturists during five year period (1931-35) is 41315 acres as against 544,230 acres lost by them ; the net loss to agriculturists is seen to be 492, 915 acres in five years. The Marwaris, the Vaishyas and other moneylenders and trading communities have been steadily ousting the cultivators from their fields. Such a tendency impedes agricultural progress and breeds inefficiency. It increases the number landless farmers. The reduction in the economic status of the peasant which results from the transfer of land to the moneylender causes inefficiency because the moneylender sublets the land at a rate which hardly leaves any sufficient profit to the cultivator to induce him to raise a good crop.¹ Dr. Thomas has rightly remarked, "A society steeped in debt is necessarily a social volcano. Discontent between classes is bound to arise, and smouldering discontent is always dangerous. It may not anywhere blaze out into a revolution ; but recurring social unrest is worse than revolution, in that it perpetuates economic inefficiency and puts off reconstructions."²

(5) The worst social and moral effect of the indebtedness is that it results in the servitude of the debtor. If the moneylender is an influential person and particularly so if he is also a land owner. The borrower has to do free service for him when called upon to do so. In many places money is borrowed by the cultivators with the condition that they would undertake to repay or perform labour on farm and in the houses of the moneylenders until the debts are cleared, and after their death their sons are bound by the same agreements to serve. The poor debtors are not allowed to serve anybody so long as work on the moneylender's farm is necessary. In return for these services they get a customary allowance of a few pice per day, coarse food, old clothes and now and then new clothes and rewards on auspicious occasions. Their wives and children are required also to serve the moneylender for a pittance. Such systems are known as *Kamiuti* in Bihar and Orissa and the neighbouring parts of the Eastern U. P. and

1 *Central Banking Enquiry Committee Report*, p. 144.

2 P. J. Thomas, *Problem of Rural Indebtedness in India*, p. 14.

Ponniyal system in Madras. Something like this system also prevails in M. P. The steady transfer of land, under the load of heavy indebtedness, is turning a class of sturdy and honest peasants into a band of disillusioned and demoralised serfs.

The moral integrity and probability of the Indian farmer is tottering under the growing weight of the indebtedness. For the inevitability of indebtedness, from which he has not even a remote hope of escape turns him into a dishonest debtor, an inefficient farmer, thriftless head of the family and an irresponsible citizen.¹

Why should Agriculturist be protected by Debt Legislation ?

In a predominantly agricultural country like India, the peasant forms the backbone of the Indian economy. "The lesson of universal agrarian history from Rome to Scotland is that one essential of agriculture is credit. Neither the condition of the country nor the nature of the land tenures, nor the position of agriculture, affects one great fact that agriculturists must borrow,"² The Indian agriculturist in his zeal to borrow money, inevitably falls into the trap of the usurer. Usury has thus become the bane of the bone of the peasant proprietor. Hence, there is ample justification not only for enacting laws to extricate the peasants from the clutches of the moneylender, but also for devising such machinery as will supply cheap credit facilities for the agriculturist.

Debt Legislation

Laws to relieve the distressed debtors can be traced from the time of the Dharamashstras (5th century B. C.) to the present day. Legal rates of interest were fixed and concessions were offered for higher classes. Six per cent was the legal rate and any rate above this was declared to be null and void. It was also provided that the amount of interest paid should not exceed double the principal. During the Muhammadan period, State loans were advanced to officials and members of the Royal family. Loans were advanced free for the first year and after that period there was a progressive increase in the rate of interest. Loans were also advanced to the agriculturists in times of drought, pestilence, etc. From the year 1793 where proprietary rights were granted to the zamindars (the collectors of revenue) we find a steady growth in tenancy legislation.

Owing to the periodical recurrence of famines, returns from the soil were poor and large-scale borrowing became necessary.

1 R. D. Tewari, *Indian Agriculture*, pp. 251-252.

2 Nicholson, *Report Regarding the Possibility of Introducing Land and Agriculturist Bank in the Madras Presidency*, (1895).

Many agriculturist moneylenders came forward to lend money solely with a view to appropriate the lands of the borrower. The debts of the peasants began to increase greatly. Even in cases in which the peasants possessed no right to transfer lands, they borrowed at as high rates of interest as those who had a right to the free transfer of land. One way or the other, the peasant was handicapped by debts. Hence, the first set of laws passed tried to relieve the big landholders of their indebtedness and prevent their estates from being transferred to the moneylenders. Encumbered Estates Relief Act, 1876. Chota Nagpur Encumbered Estate Act of 1876, the Jhansi Encumbered Estates Act of 1882. These Acts provided for the judicial determination of original principal, and allowed only a reasonable rate of interest. Sind Encumbered Estates Act, 1896, Bundelkhand Encumbered Estates Act of 1903 were passed to relieve the big landholders of their debts. In Madras and Bengal the Court of Wards Act took the place of the Encumbered Estates Act in other provinces.

In the year 1879, the Deccan Agriculturists' Relief Act was passed. The whole Act was based on the recommendations of the Deccan Ryots Commission, 1878. The detailed review of the working of this Act and its subsequent Amendments in 1882, 1886, 1895, 1907, 1910, 1911 and 1912 yields very useful information about the failure of debt legislation in solving the problem of agricultural indebtedness. The Act provided for an investigation of the history of the debts and the transactions between the agriculturists and their creditors. The genuine principal as well as the rate of interest were to be determined according to the Act only in the light of the transactions. It provided for an insolvency procedure for the agriculturists. It also provided for the prevention of the sale of land not specifically pledged and for the restoration of the land to the debtor under certain circumstances even when there was a sale deed between the debtors and the creditors. Safeguards to prevent frauds in moneylending, a special machinery to render cheap and summary justice to ryots and the provision for conciliating the debts in the village courts were some of the features of the Act.

These Acts were not of great use to the agriculturists. When compared to the general indebtedness of the agriculturists, only very low amounts were ever advanced. The agriculturists hated the delays involved in the sanctioning of loans. The moneylender was easy of access and the Acts were unable to protect the agriculturists from falling into the share of the moneylender.

When the Government understood the futility of the Usurious Act, they gave their attention to the licensing and control of moneylenders. The Punjab Regulation of Accounts Bill of 1930 and the British Moneylenders Act of 1927 were

steps in the right direction. The former made it obligatory on the moneylender to keep regular accounts and to keep the debtors informed every six months of the correct amount owed by him. Failure to keep accounts resulted in the disallowance of the interest partly or wholly. The Second Act provided for taking out licence by the moneylenders, prohibited the levy of compound interest; and the supply of information and of the copies of relevant documents relating to the state of loan on demand by borrower was made obligatory. These Acts were in the nature of experiments in regulating usurious moneylending.

Land Alienation Acts. Assiduous moneylending solely with the objects of appropriating borrowers' lands led to the creation of a class of non-agriculturist land-owners; and the peasants driven out of the soil were unable to take out a living. With a view to prevent the transference of the land from the agriculturists to non-agriculturists class various Land Alienation Acts had to be passed. The Punjab Alienation Act of 1900, the Bundelkhand Alienation Act of 1903 and the Central Provinces Alienation Act of 1916 were some of the measures passed in order to restrict the peasants' right to transfer lands.

The ultimate object of these Acts was to check the growth of indebtedness. But their main purpose was defeated by the emergence of a class called the 'agriculturist moneylender.' In certain cases non-agriculturist classes were also impelled by them to establish a right to call themselves agriculturists.

Debt Relief Legislation

The economic depression of 1930 gravely affected the repaying capacity of the agriculturists. Prices of agricultural produce fell and the real burden of the debts increased. The moneylenders sought the aid of law courts to force the sales of the lands of debtors. The dangerous prospect of the emergence of a landless peasantry became imminent. Provincial governments had to devise ways and means to lessen the debt burden of the agriculturists and an enormous amount of debt legislation during the decade of 1930—40 became accordingly inevitable.

(a) *Moratorium Laws.* Before formulating debt relief policies, several Governments took steps to provide immediate relief to the agriculturist debtors in the form of moratorium, by staying the execution of proceedings against them and postponing sales of land. The Moratorium Laws gave considerable relief to the debtors, but they suffered from these defects :—

(1) Delay in their enactment.

(2) Conditional consideration of relief at borrower's depositing some part of the principal or interest debarred many of the debtors from taking full advantage of the measures.

(3) Main attention having been paid to the protection of land the agriculturists, who did not possess land, could not get adequate relief.

(b) The next stage was the undertaking of measures to scale down the burden of interest.

Almost all Provinces amended the Usurious Loans Act of 1918. The following table gives the amendments to Usurious Loans Act passed in several Provinces and the rate of interest deemed usurious.¹

	Simple secured interest per cent	Loans compound interest per cent	Unsecured Loans simple interest per cent	Loans compound interest per cent
Madras Debtors' Protection Act), 1934, (Section 6-A) ...	9		15	
Punjab Relief of Indebtedness Act, 1934, (Section 5)	12	9 with annual rests	18 $\frac{1}{4}$	14 per cent with annual rests
The Central Provinces Usurious Act, 1934...	12	10	18	
The United Provinces Usurious Loans Act, 12, 1934, (Section 3)	12		24	
The Bengal Money- lenders' Act, 1933, (Section 4) ...	15	10	25	10
The Bihar Money- lenders' Act, 1938, (Section 9) ...	9		12	
The Orissa Money- lenders' Bill, 1938, (Section 9) ...	9		12	
The Bombay Money- lenders' Bill, 1938, (Section 29) ...	9		12	
The Bengal Money- lenders' Bill, 1938, (Section 29) ...	...	...
(Cash loans) ...	9		15	
(Kind loans) ...	15		25	

¹ N. G. Abhyankar, *Provincial Debt Legislation in Relation to Rural Credit*.

	Simple secured interest per cent	Loans compound interest per cent	Unsecured simple interest per cent	Loans compound interest per cent
The Assam Money-lenders' Act, 1934, (Section 8)	12½	...	18	...
The Assam Money-lenders' Amendment Bill, December, 1937	9½	...	12½	...
Bombay Money-lenders' Act, 1946 ...	6	...	9	...

Another method by which the Provincial Government tried to reduce the payments towards accumulated interest was the adoption of the principle of Damdupat. Bengal (1933), U. P. (1934), Madras and Bihar (1938) and Bombay (1938) adopted this principle. Under this principle, no court shall decree by way of arrears of interest, a sum greater than the principal of the loan.

Although the provisions vary from State to State the debt relief measures have got the following main features :—

1. The issue of receipts, maintenance of proper account registers, noting of discharges on bonds, submission of periodical returns to debtors and supplies of copies of loan documents were made obligatory. The penalties prescribed for their non-compliance included the disallowing of interest for certain periods or of costs of suit and deduction of double the amount paid by the debtor but not recorded by the creditor.

2. Illegitimate charges were prohibited and protection against molestation and intimidation was provided.

3. The suits could be tried only within the residential jurisdiction of the debtors.

4. Debtors could deposit in the court the sum refused by the creditor and were given rights to sue for accounts.

5. The conversion of rent arrears into debt were not allowed.

6. The Civil Procedure Code was amended in regard to the detention of debtors.

7. Provision was made for the reduction in the rate of interest, in general or by the application of Damdupat principle in several forms.

8. The penalty of fine or even imprisonment was imposed for the overwriting of bonds.

9. Registration and licensing of moneylenders was provided for.

(c) The next stage was the reduction of debts on a voluntary basis. For this purpose legislation was passed in many States—*e.g.* the Punjab Debt Conciliation Act of 1934, the Bengal Agricultural Debtors Act of 1935, the Assam Conciliation Act of 1935, the Madras Conciliation Act of 1936—to set up, in the form of Conciliation Boards, a machinery through which debtors could be assisted to get the consent of their creditors to a reduction of a debt and its repayment in convenient instalments usually 20 to 25. The consent of creditors who together accounted for a certain minimum percentage of the individuals' total debt was necessary before any part of it could be finally treated as conciliated.

The main features of the Debt Conciliation measures may be summarised thus :—

1. A certificate is issued to by the Conciliation Board if a number of creditors with a certain percentage of debts agree to the Conciliation proposals or even if a single creditor agrees. After the issue of a certificate, the court does not allow the cost of the suit, the rate of interest is limited to 6 per cent only and priority is given to the award-holders in recovering their debts.

2. The court-fees is reduced.

3. Instalments are recovered through revenue officers.

4. During the period of award the whole property of the debtor carries a charge for the debts.

5. Court proceedings are stayed.

6. Creditors failing to submit their claims to the Boards are not authorised to recover them afterwards.

From the voluntary principle, the transition was to compulsion. Measures for the compulsory reduction or adjustment of debts of agriculturists usually contained the following features:—

- (1) Reduction of principal as well as interest in accordance with scales which were related to the time of contraction of the debt ;

- (2) The reduction of the maximum rates of interest chargeable on outstanding debt, and in some cases on new loans ;

- (3) Extended applicability of the law of *damdupat* ;

- (4) Limits on size of adjustable debt ;

(5) Regulation of mortgages ;

(6) Protection of the agriculturists against certain legal proceedings ; and

(7) Exemption of specified items of property from attachment.

The classes of debtors to whom relief was available varied from State to State. Thus, the Madras Agriculturists Relief Act (1938) applied to all agriculturists and all persons having interest in land. The C. P. and Berar Relief of Indebtedness Act (1939) extended the relief to agriculturists as a class ; while the U. P. Encumbered Estates Act (1934) was confined to landlords who paid a local rate of not less than Re. 1. The Travancore Debt Relief Act (1940) was applicable to all debtors, whether agriculturists or not. The Punjab Relief of Indebtedness Act (1934 as amended in 1940) applied to agriculturists whose holdings were less than 50 acres and whose mortgaged debt was less than Rs. 5,000.

The Debt Conciliation Boards have achieved substantial results in some States. In the Madhya Pradesh the total debt of Rs. 15·6 crores has been scaled down to Rs. 7·7 crores, *i.e.*, a little less than 50 per cent. In Bengal a total debt of Rs. 52 crores has been reduced to Rs. 32 crores, that is, by over 63 per cent. Similarly in Madras, little more than Rs. 5 crores has been scaled down from Rs. 10 crores to Rs. 4 crores. In the Punjab during one year ending 31st December, 1940, debts of Rs. 91·45 lakhs were scaled down by Rs. 55·6 lakhs. From the available data the Rural Credit Survey Committee, reaches the conclusion that the extent of reduction in debt varied from about 19 per cent in Travancore to about 76 per cent in Saurashtra. In most Part A States, debt adjustment involved reductions ranging from 40 per cent to 60 per cent and in Part B States from 20 to 40 per cent.¹

There are some defects in the working of D. C. Boards. *Firstly*, by corruption among Board officials and high cost to Government great hardships are caused to the debtor by the stoppage of his future credit altogether from all sources till the decreed debt or the award was paid off.

Secondly, the absence of facilities for repayment of the decretal amounts in cash hampers the successful working of the Debt Conciliation Boards. It is, therefore, desirable, to establish Land Mortgage Banks which can take over the liabilities of the agricultural debtors.

1 *Rural Credit Survey Committee Report*, Vol. II, p. 123.

Thirdly, the M. P. Land Revenue Report, 1937, pointed out that under the Debt Conciliation machinery the debtor found it difficult to secure fresh credit until the last of his instalment is paid. It is necessary, therefore, that the Debt Conciliation Board should take into account the repaying capacity of the debtor after he has provided for the maintenance of his family, rents and taxes, his dues for the repayment of short-terms funds and for the next year's cultivation needs.

Money Lending Legislation

Preceded by sporadic measures, either for the whole of India or for individual States, the bulk of moneylending legislation was passed by most States after 1930. The main provisions of the existing legislation relate to :

(i) *Licensing and registration of moneylenders.* Various Acts like the C. P. Moneylenders' Amendment Act of 1936, the Punjab Registration of Moneylenders' Act, 1938, the Bengal Moneylenders' Bill of 1938, the Bihar Moneylenders' Bill of 1938, the U. P. Moneylenders' Bill of 1939 and the Bombay Moneylender's Bill of 1938—provide for the registration and licensing of moneylenders. Moneylending without licence has been made an offence.

The details for licensing the moneylenders vary for different States. The Rural Credit Survey Committee remarks : "What is noteworthy, however, is that licensing itself as a requirement is not uniformly imposed by all States. In Bombay, Hyderabad, Madhya Pradesh, Madhya Bharat, Mysore and West Bengal, it is an offence to carry on the business of moneylending without a licence ; in Bihar, Orissa and Punjab, on the other hand, to be an unlicensed moneylender is not to be in illegal one ; the effect of not taking a licence is merely to bar access to law for recovery of dues."

(ii) *Regulation of Accounts.* To check the evil practices of moneylenders, the maintenance of accounts in prescribed forms, furnishing of receipts and the sending of annual statement of accounts to debtors have been made compulsory. Madras, Madhya Pradesh, Assam, Bengal, U. P. and Bombay have made legislative provisions for the regulation of accounts on the lines of the Punjab Regulations of Accounts Act, 1930.

(iii) *Penalties for infringement and machinery for enforcement.* Fine and imprisonment as penalties are confined to contravention of specified provisions. Special machinery for enforcement exists in Bombay, Mysore and West Bengal.

(iv) *Fixing of maximum rates of interest chargeable.* The provisions which seek to regulate the moneylenders' rate of interest also

differ from State to State. Compound interest is banned in Assam, Bihar, Hyderabad and Coorg. The maximum simple rate of interest chargeable on secured loans varies as widely as from 5 in Madras (under the Agriculturists' Relief Act) to 12 per cent in Madhya Pradesh and Uttar Pradesh ; for unsecured loans, the lowest rate is $5\frac{1}{2}$ per cent (again in Madras) and the highest 24 per cent (in U. P.) The rule of Damdupat is embodied in several of the Acts. In most States the maximum rate merely limits what the moneylender can recover, through a Court of law ; in some it is a punishable offence to charge more than the maximum.

(v) *The protection of debtors from molestations, intimidation, etc., and the exemption from attachment of items of debtors' property*—in some States figure in the measures of legislation dealing with debt relief—e.g., C. P. Debtors' Protection Act, 1937, Punjab Debtors' Protection Act, 1936, etc.— ; in certain others, the relevant provisions occur in both sets of legislation, namely, moneylending and debt relief.

(vi) *Regulation of mortgages.* Several Acts contain provisions for the automatic redemption of mortgages in certain circumstances and after the expiry of a specified period. The most usual form of penalty for infringement of the law is the denial to the transgressing creditor of the right to resort to courts for the recovery of even his legitimate dues.

Operation of Moneylending Legislation. (Rural Credit Survey Committee's views) :—

The Committee holds the view that there is large, scale and country-wide evasion of the restrictions imposed on the money-lenders. The modes of evasion reported are as numerous as they are ingenious. Some of them are as follows :—

(a) Obtaining a pronote for a larger amount of principal than that actually lent.

(b) Interest computed at illegal rate and deducted in advance from the amount lent.

(c) The making of a separate pronote (besides the main one) in the name of a servant or relative of the moneylender to cover the extra interest.

(d) Forward purchase, together with false evaluation of the debtor's produce.

(e) Conditional sale.

(f) Unobjectionable sale-deed for purposes of the law, and illegal, if informal, understanding as to the real substance of the contract.

(g) Taking over of debtor's land of usufructuary mortgage on terms which in effect imply the charging of illegal interest or taking on mortgage the milch cattle of the debtor on a similar basis.

Effect of Debt Relief Legislation

The Punjab Civil Justice Report, 1936, commenting on the working of the Relief of Indebtedness Act, stated "The Act has lowered rural credit and brought about an appreciable decrease in litigation." The Report of the Economist for Enquiry into Rural Indebtedness in Madras (1946) says of some of these measures that they led to the contraction of credit or evasion of law or both.

The Rural Credit Survey Committee in this connection remarks that, "it is not surprising that legislation of this type should for the time being at any rate result in some contraction of credit, if only because the creditor charging under 'present losses' also takes a gloomy view of future risks. A more specific problem in some States was the 'adjusted debtor' himself; for him it was not so much a case of contraction as of elimination of all private credit. The very process of adjustment involved so many restrictions on the alienability of his property that no lending agencies could be expected to be predisposed favourably towards him. Meanwhile, the adjusted debtor would have to raise crops and before that raise money for the crops. So serious a view of his plight was, for instance, in Bombay that the Government instituted for him a system of 'crop loans' which in the main were provided by co-operatives on the basis of a part being guaranteed by the Government."¹

Of course to some extent contraction of credit has been there and to the extent it has restricted wasteful forms of expenditure, it is in the interest of the cultivators. But such a contraction has not been an unmixed evil. As now the moneylender while advancing loans to the agriculturists bears the additional risks as these transactions are illegal, he protects himself by charging more amount from the agriculturist borrowers by way of interest to cover this risk. This has increased the costs of credit to the agricultural borrower received through the moneylenders.

The measures to control the rates of interest in various States have also proved ineffective. The Rural Credit Survey Committee points out that, "the proportion to the total borrowings of cultivators from private credit agencies (other than commercial banks) of such of those borrowings as bear a rate of interest of 25 per cent or more is as high as 70 per cent in Orissa, 49 per cent

¹ *Rural Credit Survey Committee Report*, Vol. II, p. 124.

in Tripura, 40 per cent in West Bengal and in Himachal Pradesh 29 per cent in Uttar Pradesh and 27 per cent in Bihar. Nor are annual interest rates of 50 per cent or above infrequent in certain areas ; borrowing at this high level of interest accounted for as much as 64 per cent in Jhabua, 30 per cent in Tripura, 27 per cent in Malda, 13 per cent in Hazaribagh, 10 per cent in Koraput and 9 per cent in Nainital.”¹

It follows that moneylending legislation has had little effect on what the cultivator is actually charged as interest by the money-lender. The following data illustrate the point² :—

State	Maximum stipulated interest rate	Amount borrowed from traders and commission agents, agriculturists, moneylenders, professional moneylenders, and landlords at rates higher than the stipulated maximum as percentage of the total borrowing from these agencies (excluding borrowings at unspecified rates)
	Per cent	Per cent
Assam ...	12½	14
Bihar ...	12	88
Bombay ...	12	19
Madhya Pradesh ...	18	67
Madras ...	5½	86
Orissa ...	12	86
Punjab ...	12½	34
Uttar Pradesh ...	24	29
West Bengal ...	10	88
Hyderabad ...	9	83
Mysore ...	12	10
PEPSU ...	12½	65
Travancore-Cochin	12	12

It will be seen that the proportion of the borrowing rates higher than the stipulated maximum was around 88 per cent in West Bengal, Bihar, Madras, Orissa and Hyderabad and about 65 per cent in Madhya Pradesh and PEPSU.

It has to be remembered, however, that even comprehensive debt legislation such as the Provincial Governments have under-

¹ *Rural Credit Survey Committee Report*, Vol. II, pp. 173-74.

² *Ibid.*, p. 174.

taken during the last ten years, cannot solve our agricultural problem, unless it is supplemented by measures which can effect far-reaching improvements in agricultural production.

The debt of the cultivating classes is but the symptom of a deeply rooted disease. The legislation that we have briefly reviewed may be regarded as of the nature of ambulance work, stopping the bleeding and the source of further infiltration of the disease, by applying antiseptics and bandaging whilst leaving untouched the roots of the disease. Legislation for scaling down the debt or restricting the activities of the moneylenders will not cure the disease; nor will the fixation of a maximum rate of interest, or a system of registration and compulsory keeping of accounts touch the roots; an effective co-operative movement reaching every village in its activities and backed by such financial resources as the total national assets of the country can provide, may be capable of solving the immediate problem.

It has also to be remembered that with the growth of transferable rights in land, it is not the farmer but the moneylender who takes away the benefits of irrigation or the cultivation of commercial crops. Where land passes into the hands of the moneylender who has no capacity for farming, the cultivator becomes a tenant at will on his own holding, leasing it from the moneylender at a rate which leaves him no incentive to improve the crops and with no credit on which he can borrow. A country like ours with an enormous agricultural population runs a serious risk of aggravating its property under such conditions, with neither the will nor the ability to intensify production on the part of the rural classes. Not until the ryots are enabled to start on a clean slate by measures like the wholesale cancellation of existing debts and get security with regard to their agricultural operations by the provisions of regular credit facilities, by consolidation of holdings, by insurance of cattle against famine and disease, by the establishment of subsidiary industries, in short, by a many-sided and simultaneous attack on all the factors connected with their poverty, can there be a reasonable hope of better and more prosperous conditions for Indian agriculture.

Finally, the problem of agricultural indebtedness is intimately linked up with the larger question of economic development. Poverty, ignorance or, absence of industrialisation, a static social organisation, deep-rooted religious traditions, the uncertainties and insecurity resulting from fluctuations in world prices, all these are elements in a situation in which indebtedness and low agricultural productivity also enter. No solution of any one of these problems is possible, apart from a many-sided and comprehensive reconstruction of the corporate life of the country which will include all the elements.

CHAPTER 17

RURAL FINANCE

"Credit," says an old French proverb, "supports the farmer as the hangman's rope supports the hanged." But if credit is sometimes 'fatal,' it is often indispensable to the cultivator. As Indian aphorism in verse tells him that only that village is fit to live in which "has a money-lender from whom to borrow at need, a *vaid* to treat in illness, a Brahmin priest to minister the soil and stream that does not dry up in summer." Agricultural Credit is a problem when it cannot be obtained; it is also a problem when it can be had but in such a form that on the whole it does more harm than good. In India it is this two-fold problem of inadequacy and unsuitability that is perennially presented by agricultural credit.

That the agriculturist cannot carry on his business without outside finance is a fact proved by history and evidenced by the appalling indebtedness of the persons engaged in the business of agriculture. Agriculture requires special and separate treatment in the field of finance as the conditions in this profession are entirely different from those in the manufacturing industries. There are small units of production to be dealt with; there is no control over yield and quantity; there is a lack of organisation; much time intervenes between the sowing and selling processes; land is not a suitable security for loans. Credit is more necessary in agriculture than in manufacturing industries because the former takes months to receive the return of its labour and the supply of agricultural produce is seasonal while the demand exists all the year round which makes financial arrangements much more unavoidable in order to make the adjustments of both and stabilize the prices.

According to F. Nicholson, the chief objects for which agriculturists need money are: "to pay current expenses of cultivation such as the purchase of seed, manures, etc., the purchase of cattle, implements and raw materials, to acquire new land; or improve land by irrigation, drainage, weeding and planting, to pay up old debts, to build and repair houses, to purchase food-stuffs and other personal necessities, to pay land revenue to the Government, to meet expenses connected with marriage and other social events in the family, to buy jewellery and to conduct law suits",¹

1 F. Nicholson, *Report on Land and Agricultural Banks in Madras Presidency*, Vol. I, p. 23.

Broadly these various items may be divided into directly productive, indirectly productive and unproductive expenditure. Money spent on cultivation, the purchase of cattle, fodder and implements and holding over grain for fair market may be regarded as "*directly productive*". While that spent on payment of land revenue, discharging old debts, personal maintenance and education is "*indirectly productive*." But money spent on litigation and social and religious ceremonies may be regarded as "*unproductive*".

There is a world of difference between the productive and unproductive debt. The one fertilizes, the other waterlogs the soil. From one springs the crop by which debt can be repaid, from the other half, the ills that shackle body and mind.¹

The I. L. O. Report on the Economic Background of Social Policy in Asiatic Countries referring to the heavy burden of indebtedness on the rural population observes : "If the debts of the rural population were incurred primarily for the purpose of improving agricultural productivity, the growth and extensiveness of rural indebtedness would give no cause for alarm. In many Asiatic countries, however, the heavy rural debts have accumulated chiefly as a result of borrowing to finance consumption."

The Agrarian Reforms Committee of the Congress quoting from field research in the country considered 27, 61 and 12 as broadly the proportions of productive, non-productive and unproductive finance respectively.

Classification of Credit

The R. C. S. C., classifies agricultural credit as period-wise, purpose-wise, security-wise, and creditor-wise. The term or period of loan is the most common means of describing it, e.g., short period, medium-period and long-period. The period-wise classification is a general classification of which the other three may be regarded as the sub-divisions within each group. According to the committee the chief features of period-wise loans are² :—

1. *Short-term* or "Seasonal Credit," providing farmers with the working capital they require to run their farms efficiently, to obtain crop in the best possible circumstances and to carry on credit until the harvest can be sold. The period of such credit does not exceed 15 months.
2. *Medium-term Credit*, affording farmer to purchase livestock and farm machinery as also to carry out small or occasional improvements of an average duration ; e.g., the conversion of systems of cultivation ; such credit is required for periods longer than 15 months but are repayable in 5 years or less.

1 M. Darling, *Punjab Peasants in Prosperity & Debt*, p. 32.

2 *Rural Credit Survey Committee Report*, Vol. II, pp. 153-154.

3. *Long-term Credit*, affording farmers the means required to purchase small or medium holdings or to effect lasting improvements, e.g., drainage, construction of wells, embankment and the erection of livestock quarters, soils, store houses and similar other farm buildings litigation, repayment of old debts. Such credit is required periods ranging from 15 to 20 years.¹

Credit Requirements

It is very difficult to estimate the credit requirements for the working capital. The Central Banking Enquiry Committee, after comprising the figures of rural indebtedness and the rough estimates of the short-term credit given by some of the Provincial Banking Enquiry Committees took a figure of 300 to 400 crores of rupees as a lower limit for the whole of British India of the cultivators' requirements for short-term and intermediate working capital. But Dr. Baljit Singh is of the opinion that this estimate is not accurate. According to him the working capital required for agriculture at a reasonable standard of farming is to the extent of Rs. 600 crores at least and if the pitch of cultivation is to be raised to a higher level the country may require a further sum of Rs. 600 crores for its farming capital.²

It is equally difficult to make even a rough estimate for the long-term requirements of cultivators. The Central Banking Enquiry Committee points out that if out of the total rural indebtedness of Rs. 900 crores a sum of Rs. 400 crores represent short-term and intermediate credit, the requirements for long-term credit to pay off the old debts amount to at least Rs. 500 crores. "In addition, we have the items of improvement of land and methods of cultivation which require very large sums having regard to the fact that cultivated acreage of agricultural land in India is more than 200 million acres. Next come the long-term requirements for purchase of land and building houses, setting up irrigation plants and the like. No estimate is possible of the requirements of these various classes even in an approximate measure. We can only say that there is an almost unlimited scope for the grant of the long-term loans to the cultivators in India."³

The requirements for short-term finance for seasonal operations vary from Rs. 30 per acre of land where agricultural implements are simple and agricultural technique traditional—to

1 It is 30 years in Finland ; 33 1/2 years in New Zealand, 33 years in Chile, 42 years in Australia, 54 1/2 years in Austria, 57 years in Switzerland, 63 years in Hungary, 68 1/2 years in Ireland, 75 years in France, 60 years in Denmark and Italy. Vide (i) Herricks, *Rural Credit*, p. 3 and (ii) M. Tardy, *System of Agricultural Credit and Insurance*, p. 35.

2 Baljit Singh, *Whither Agriculture in India*, p. 222.

3 *Report of the Central Banking Enquiry Committee*, p. 71.

Rs. 1,000 in areas suitable for intensive cultivation under modern technological methods with heavy machinery. On the basis of minimum needs, the total finance required for crops production would be Rs. 11,500 millions. "The requirements under medium-term finance would amount to Rs. 26,000 millions on the basis of Rs. 100 per acre sown. Regrading marketing finance it is estimated that 30 per cent of the food crops and the 80 per cent of the cash crops are marketed. Under the prevalent conditions of marketing the finance for marketing would be on the high side, if the chain of middlemen are to be eliminated and the practice of tie up loans is to be prohibited. Assuming marketing finance at one-third of production finance, the amount required would be Rs. 3,830 millions. All these would give a phenomenal total of Rs. 1,70,530 millions or Rs. 17,053 crores as the minimum investments needs in agriculture, Rs. 1,28,600 million on the capital account and Rs. 41,930 million at working funds. The spread of capital investment over a period may reduce the size of initial investment. Assuming that the whole expenditure is spread over a period of 10 years, the annual requirements would be Rs. 12,860 millions. Even at this reduced rate, provision must be found to mobilise Rs. 54,790 million for investment."¹

The R. C. S. C. Report points out that the total annual borrowings of the cultivator—short, medium and long—may be very broadly estimated for the whole of India to be of the order of Rs. 750 crores.²

Requirements of good System of Credit to Agriculture

According to Loius Tardy, agricultural credit to serve a really useful purpose should conform to the following criteria³ :—

1. It should be granted for the sufficiently long time, commensurate with the length of operation which it is designed to facilitate.
2. It should be granted at a low rate of interest, *i.e.*, it should ensure equalisation of credit terms.
3. It should be adequately secured in order to avoid any abuse of credit facilities, but the security should not necessarily be material. It should be, if necessary, in the form of a personal credit secured mainly on borrower's moral standing and farming ability.

1 Thirumalai, *Post-War Agricultural Problems and Policies in India*, (1954), pp. 208-209.

2 R. C. S. Committee Report, Vol. II. p. 156.

3 M. Tardy, *Op. Cit*, p. 35.

4. It should be adapted to the average yield and capacity for the repayment of the farms, particularly during periods of economic depression.

5. It should be placed in the hands of the Directors which have received special training and had actual banking experience.

The R. C. S. Committee sets out the following requirements which the recognised system of institution credit should satisfy¹ :—

- (i) It should be associated with the policies of the State.
- (ii) It should be an effective alternative to the private agencies of credit.
- (iii) It should have the strength of adequate resources and of well-trained personnel.
- (iv) It should be in a position to co-ordinate its activities not only internally in relation of different sectors pertaining to short, medium and long-term credit, but also to complementary arrangements for marketing, processing, and other activities of the cultivator.
- (v) It should lend not merely on the security of land and other usual forms of security, but also on the security of anticipated crops.
- (vi) It should effectively supervise the use of credit and constantly bear in mind the borrower's legitimate needs and interests.
- (vii) It should be such that it helps in the effective growth and development, from the village upwards, of the co-operative form of association.

Agencies supplying Rural Credit

The supply of the rural credit—particularly the credit requirements of the middle and poorer classes of cultivators is provided by private moneylenders, co-operative societies, the land mortgage banks, the Government ; commercial banks, Nidhis and Chit funds in Madras and Loan Offices in Bengal.

1. Rural Moneylenders

Of all the agencies engaged in providing agricultural finance the individual moneylender is by far the most important both

¹ *General Report of the Committee of Direction, (1955), pp. 59-60.*

from the point of view number and volume of business. There are two classes of moneylenders, one the more common is the professional moneylender who combines his business with trading in the village produce, the other non-professional moneylender who is drawn in from the ranks of landowners and well-to-do agriculturists, pleaders, pensioners, widows who usually lend money to those whom they know fairly well on good security which consists generally of land or ornaments.

The data collected for the All-India Rural Credit Survey Committee clearly show the great importance of private credit agencies. An idea of the relative importance of various agencies can be had from the following table :—

BORROWINGS OF CULTIVATING FAMILIES—INDIA			
Credit Agencies		Proportion of borrowings from this agency to the total borrowings of cultivating families	
Institutional Agencies :—			
Government	3.3
Co-operative	3.1
Commercial Banks		...	0.9
			<hr/>
Private Agencies :—			7.3
Relatives	14.2
Landlords	1.5
Agriculturist Moneylenders	24.9
Professional (Private) Money- lenders	44.8
Traders and Commission Agents	5.5
Others			1.8
Private Agencies			92.7
Total			<hr/> 100.0

It is obvious from the table above that for about 93 per cent of the total borrowings, the rural families have to depend on private agencies 45% is borrowed from private and 25% from professional moneylenders.

The U. P. Banking Enquiry Committee Report states that, "The most dangerous creditor from whom a tenant can borrow is his own landlord since the latter thereby acquires a double hold over the farmer. If a tenant pays his rent, but not the interest

on his debt, a landlord can sue him in a Civil Court. If the tenant pays the interest on debt, but not his rent, the landlord can sue in a Revenue Court. Worse still, the landlord can, if he chooses, credit all payments to the debt and so keep the tenant in arrears with his rent, which puts the latter's crops in his power by distraint and gives him the right to eject him if he pleases. Again there is evidence before us showing that occupany tenants have occasionally been compelled to surrender their rights in liquidation of a debt to their landlords."

Professional Moneylenders

In the Indian village the moneylender is often the one thrifty person amongst generally thriftless people, and that his methods of business, though demoralising under the modern conditions, suit the happy-go-lucky ways of the peasants. He is always accessible, even at night; dispenses with troublesome formalities, asks no inconvenient questions, advances promptly and if the interest is paid, does not press for the repayment of the principal. He keeps in close touch with his clients, and in any village shares their occasions of a weal and woe. With his intimate knowledge of those around him he is able, without serious risk to finance those who would otherwise get no loan at all. And he not only finances his neighbours, but frequently keeps a small shop to supply their peasant needs and is nearly always prepared to market their produce. No one doubts that he is still a necessity. "It is his capital, constantly revolving in its own circle, which brings crop after crop to the threshing floor" and it is he more than any one else who tides the peasant over a time of distress. It is a complicating feature of the present crisis that his bags are empty and his doors closed. The moneylender's services are many, but it must be admitted, he exacts a high price in return. Yet his charges are not entirely disproportionate to the trouble and risk of his business and to the discomfort and unpopularity of his calling.

Questionable Practices of the Moneylenders

His role in the agricultural economy of the country has been aptly described by the U. P. Banking Enquiry Committee in the following words in its report. "He is certainly no philanthropist, his object is to make money, and he is not always particular regarding the means by which he does it. He will deduct future interest from the principal before he pays it; he will debit his client with all accidental expenses. He will cause an illiterate borrower to put his thumb-impression on a blank form, and subsequently fill it up with a sum in excess of the amount actually lent. He charges a rate of interest which is always high and often

extort
 extortionate, and compounds it at frequent intervals. Nevertheless when occasions arise he can and does show leniency. He will not, for instance, use his fraudulent bond unless his client by his contumacy forces him to go to law. Again, if his debtor is prompt in repayment he will often allow him rebate of interest when amount is fully closed. Meantime, it is to him that needy peasant turns for help in every trouble. It is he who finances the marriage suits and law suits—one almost as inevitable as the other. He does not keep the borrower waiting for money till the time for its profitable spending has passed. He does not press for repayment at due date, and if he knows that such repayment is inconvenient he does not conduct embarrassing enquiries into his client's *haysiat* (financial conditions); for what is worth, he knows it already and the element in it to which he attaches most importance is the client's reputation for prompt and regular payment."

Under this system objects of loans are not scrutinized, productive and unproductive loans are not distinguished, principal is deliberately allowed to remain unpaid for years, interest charges are so high that they inevitably accumulate and compound interest swells the account often, to preposterous figures. Worst of all, in seasons of prosperity, money, more money and still more money is pressed upon the peasant, until he becomes bound hand and foot to his creditor. "Indeed," says the Bombay Banking Enquiry Committee, "the methods of finance adopted by the Sahukar are such that once a person gets into debt it is difficult for him to get out of it." As such the cultivators have sunk deeper and deeper into the debt. Yet it was only human nature for the moneylender to do what he did; there was no other opening for his capital; the financing of agriculture was a necessity and the cultivator was ignorant, improvident and evasive. In the bargain he drove like every one else in business, he thought only of himself, and like others who had great power, he abused it. To censure him is to censure the imperfections of mankind. We should rather blame the system than the man it has moulded.

As Mr. Strickland says, "The chief evil in a moneylender's credit is not the high rate of interest or the falsification of the books which is practised by a minority of the class, but the fact that he grants loans for unproductive as well as productive objects and in excess of borrower's means and does not insist on the prompt payment on a good harvest. His ambition naturally is to see his money well invested and to live on the interest."

In addition to these defects the moneylenders' taking the advantage of the illiteracy and ignorance of the peasants, resort to

certain highly objectionable practices. The most common practices of this nature are shown as under¹ :—

1. At the time of advancing the money, the moneylender deducts in advance the total interest for the year from the principal but makes the borrower sign a bond to the effect that the full amount has been received. As no receipt is given for the interest deducted in advance, the moneylender can easily demand payment of the interest after a year.

2. Many moneylenders get the thumb-impression or signature of the borrower on the blank sheets of paper before lending money and later on enter more than the actual amount if the debtor is not regular in the payment of the interest.

3. It is a common practice for the moneylenders to manipulate the figures in their registers in such a way as to show a larger amount than is actually lent.

4. "Whenever the borrower is illiterate the sum inserted in written documents is very often shown to be larger than what is actually lent."

5. As very few moneylenders pass receipts, wrong entries to the disadvantage of the debtor are made in the moneylender's account books. Often the moneylender does not even take the trouble of entering in his books some instalments of the money received as interest.

6. Debtors have to pay something to the moneylender as a present called *Girah Khulai* (purse opening) before any business is transacted. Other charges like *Gaddi Kharcha*, *Salami*, *Katauti*, *Battawan*, etc., are also charged by the moneylender.

7. Conditional sale deeds are taken by the moneylenders to ensure against the possible evasion of payment by the debtor.

In spite of these conditions it seems inevitable that the private moneylender will continue to be the main agency for the distribution of rural credit particularly short-term and intermediate credit for he is a "dangerous necessity and his trade must be controlled and properly regulated."

Suggestions for Improvement

In order to protect both the borrowers and the lenders which would ensure the maintenance of fair and equitable relations between them and which would not only increase the supply of

1. *The Indian Central Banking Enquiry Committee*, 1931, Majority Report, p. 77. For further information refer to *R. C. S. C. Report*, Vol. II, pp. 174-176.

credit for productive purposes but also diminish ^{decrease} the supply of credit available for the unproductive purposes; it is necessary that following steps should be taken up immediately :—

1. The moneylender's business should be licensed, the rate of interest should be limited and ~~usurious~~ ^{unfair} practices stopped. The question of licensing and control of moneylenders has all been fully examined both by the Central and Provincial Banking Enquiry Committees. The former was of the opinion that, "a real and lasting solution can only be found by the spread of education, the extension of co-operative and joint banking and by the training of borrower in the habits of thrift and saving." Moneylenders requiring a licence should be compelled to submit to certain conditions, viz., (1) They should agree not to charge above the prescribed maximum rate of interest; compound interest should be prohibited. (2) They should keep accounts in a standard form and allow these accounts to be inspected by the Government Auditors once or twice a year. (3) They should give receipts for all the payments made. (4) The account of each individual borrower should be separately kept and a copy of it should be furnished to the borrower once every six months. Such legislation is necessary in the interest of large masses of agricultural population and is sure to stamp out the dishonest practices of the moneylenders and reduce the high rate of interest.

2. The reciprocal obligations of the lender and the borrower should be regulated by law in such matters as the interest chargeable on different types of transactions, the maintenance of proper account and the periodical settlement of accounts.

3. Adequate machinery should be established for administering the licensing system and reviewing the effect of regulation with a view to a continuous improvement in rural facilities.

4. The cultivator's liberty to borrow and allow loans from licensed moneylenders mostly for productive purposes should be curtailed, a small margin being allowed for unproductive purposes.

5. A system of control of crops and compulsory marketing through societies to recover the loans promptly and save the cultivator from his own improvidence, should be introduced.

^{Recommendation} Concurrently with the extension ^{extension} of the system of licensing of moneylenders steps should be taken to improve their status and link them with the indigenous bankers to the banking structure of the country.

Gadgil Committee's Recommendations

The Agricultural Finance Sub-Committee have recommended the following measures¹ :—

(1) Registration of moneylenders. (2) Licensing of moneylenders. (3) Maintenance of accounts in prescribed form. (4) Prohibition against showing in books of accounts or in any other document a sum larger than what has been actually lent. (5) Furnishing of periodical statement of accounts to the debtors. (6) Furnishing of statement to the debtors in prescribed form giving full particulars about each loan as and when advanced. (7) Issue of receipts to the debtors for every payment received. (8) Limitation of rate of interest. (9) The enforcement of the rule of *Damdupat*. (10) Prohibition against taking unlawful charges for expenses. (11) Provision to entitle the debtor to deposit at any time in a Court of law an amount in part or full payment of a loan to be paid to his creditors. (12) Prohibition of contract for payment of loan outside the State. (13) Institution of suits by the debtors for taking account and for having amounts due from them determined. (14) Protection of debtors from molestation and intimidation. (15) Infringement of the provisions of law to be made a criminal offence punishable with fine and in appropriate cases with imprisonment. (16) The definition of moneylender should be more comprehensive so as to include all loans bearing interest. (17) A State inspecting and supervising agency (similar to one functioning under the Small Loan Legislation in U. S. A.) should be set up in each State. It should carry out periodical and surprise inspection of books of moneylenders. Every moneylender should be required to submit to the agency annual returns regarding his business. The agency should publish periodical reviews of the effects and working of Debt Acts. (18) Institutional credit should be developed for this purpose and marketing should be regulated by law and licensed warehouses should be established and these receipts made negotiable.

2. Co-operative Credit Institutions

Though rural credit societies were started to carry on the business of the rural banking and replace the moneylenders, yet they have not any appreciable progress. Taking the average size of an Indian family as five members, it may roughly be estimated, says the Statistical Statements relating to the Co-operative Movement in India for 1954-55, that 80·1 million or 21% of the population had been brought under the movement as against 75·9 million or 20·2% in 1953-54.

At the end of 1954-55, there were 219,288 Co-operative Societies of all types, with a membership of 16·02 million and an aggregate working capital of Rs. 390·52 crores.

¹ *Agricultural Finance Sub-Committee Report*, p. 67.

These institutions have not followed the strict principles of banking though they take up the work of rural banking. They raise short and intermediate-term deposits and loans for their business ; while the advances they made are not adjusted to their liabilities. Owing to slackness in recoveries, over-financing and financing for unproductive purposes, even the short-term advances are not repaid within the stipulated period and is automatically turned into long-term loans. Overdues have piled up to an alarming extent. The co-operative societies cannot finance the long-term credit requirements of the rural areas because :—

(1) The resources of these societies consisting of deposits and loans obtained for short periods are not suitable for financing long term needs, (2) long-term credits can be given only on the security of land, the substituting of which for personal security may lead to the neglect of the co-operative principles, (3) the valuation of the landed security and enquiry into its titles require a sound technical knowledge and ordinary societies lack in such expert technical staff, (4) their assets will get frozen when the long-term debts are not paid on due dates, (5) Co-operative finance suffers from inelasticity, dilatoriness and inadequacy due to the selfishness or inefficiency of the management.

According to the Co-operative Planning Committee, the main causes of the limited progress are : “ the *laissez faire* policy of the State, the illiteracy of the people, and the fact that the Movement did not take the life of the individual as a whole . . . among the other causes, the small size of the primary unit and undue reliance or honorary services for even day-to-day work with resultant inefficiency in management.”¹

Dr. E. Hough so beautifully sums up the handicaps of the Movement in these words : “Poverty and malnutrition, the widespread indebtedness, the depressingly high percentage of illiteracy, and the lack of business experience, uneconomic holdings and antiquated methods, inadequate transportation and storage facilities, the lack until recently of uniform standards of weights, measures and products, great price fluctuations, dearth of regulated markets, and exploitation by moneylenders and middlemen.”² Besides, there have been the almost exclusive emphasis for so long on credit and the inadequate linking of credit with thrift and with other co-operative lines ; the tying-up of funds in long-term loans, the overdues problem ; the frequent defects of management and shortcomings in the attitude and policy of certain central institutions.³

According to Rural Credit Survey the chief causes of failures may be summed up thus : “Functional, structural and adminis-

¹ Report of the Co-operative Planning Committee, 1946, pp. 11-12.

² E. M. Hough, *The Co-operative Movement in India*, 1953, pp. 284-5.

³ *Ibid.*, p. 303.

trative defects, dearth of suitable personnel, lack of training, a background of illiteracy, the grave and chronic deficiency in roads, storage and other vital economic requirements—all these are relevant as part of the explanation."

Suggestions for Improvement

They are really in a state of suspended animation. The problem now is "to unfreeze the movement and to re-open the streams of credit wisely," and consequently the societies must be radically recognised by making changes in (a) the area of operation, (b) the function and (c) the nature of liability of our primary rural credit societies. We, however, advocate (a) a recognition of the village credit societies on the basis of one society for a group of neighbouring villages within a radius of 3 to 5 miles, (b) the gradual evolution of the rural credit societies into multi-purpose societies, (c) the substitution of unlimited by limited liability, and (d) the employment of the paid clerical staff, (e) Borrowing limit for each member and for each society should be fixed each year so that no detailed enquiries are ordinarily necessary at the time of advancing loans.

3. The Government

Government also provides financial assistance by granting loans to the cultivator under (i) the Improvement Loans Act of 1883, and (ii) the Agriculturists' Loans Act of 1884. Such loans are known as *Taccavi Loans*.

(i) The Act of 1883 authorises the grant of long-term loans by local officers for permanent improvements on land, which add to its letting value such as construction of wells or erecting of embankments, the preparation of lands for irrigation, protection of lands from flood or from erosion. Such loans are generally advanced for period extending over 25 years on the security of landed property, at 6 to 6 3/4 per cent. The loan is repayable by the equal annual instalments discharging by principal and the interest.

(ii) Whereas under the Act of 1884 short-term and intermediate term loans are granted for current agricultural needs such as the purchase of seeds, cattle, manure, implements or for building of houses destroyed by floods, etc. Such loans are repayable after the harvest.

The advantage of *taccavi* loans ^{30.11.14} lies in their long-term and low rates of interest. But the total amount lent under both the Acts is extremely insignificant being between 35 to 60 lakhs and amounts to mere drop in the ocean.¹ These loans play a very small part in agricultural financing. In addition to the inadequacy, the methods of distribution and collection are very defective and have given rise to many serious complaints. The delay in

1. Jathar & Beri, *Indian Economics*, Vol I, p. 313.

granting of loans and levy of illegal gratification of the *Patwari* and *Kanungo* coupled with extreme strictness of the Government in realisations, inelasticity of administration and difficulty of supervision have rendered these loans very unpopular, so that the agriculturist is driven to the rural moneylender who is always ready to lend. In this connection the Rural Credit Survey Report remarks, "But the record of *taccavi* is a record of inadequacies." The different aspects of this problem are¹ :—

(1) Inadequacy of amount, inequality of distribution and inappropriateness of security.

(2) Inconvenience of timing, incidental delays and impositions of various kinds on the borrowers ; and

(3) Inefficiency of supervision and incompleteness of co-ordination.

Further Government loans, like co-operative loans, are found on investigation to gravitate to the big and large landholder in preference to the medium or small farmer. Neither co-operatives nor Governments have adequate supervisory arrangements to ensure that such small accommodation as they give is utilised for productive purposes.

In pre-partitioned Indian States, on an average about Rs. 95 lakhs were granted every year—Rs. 35 lakhs under the Loans Improvements Act and Rs. 60 lakhs under the Agriculturists' Loans Act. In recent years there has been an increase in the loan disbursement under both these Acts, particularly owing to the activities under the Grow More Food campaign. In 1948-49 the amount of fresh loans advanced under the two Acts rose to Rs. 921.75 lakhs. The following table shows the amounts advanced under the two Acts in the various States in 1937-38 and 1948-49 together with the rates of interest² :—

(In Lakhs of Rupees)

State	Advanced in 1937-38		Advanced in 1948-49	
	Amount	Rate of interest	Amount	Rate of interest
Assam ...	0.24	9.09	6½	per cent
Bihar ...	1.64	33.30	6½	"
Bombay ...	9.57	483.23	3½ to 5½	"
Madhya Pradesh	15.98	211.52	4½ to 5½	"
Madras ...	9.54	41.80	4½ to 5½	"
Punjab ...	12.24	87.15	4½	"
West Bengal	3.62	20.25	6½	"
Orissa ...	1.15	4.97	4½	"
Uttar Pradesh	19.42	30.44	5½	"
Total	73.40	921.75	...	...

¹ R. G. S. C. Report, Vol II, p. 199.

² Agricultural Situation in India, December, 1950, pp. 467 and 472.

Both the Central and State Governments have been spending large amounts in recent years in the form of grants and loans to the agriculturists in order to raise the standard of tillage in the country, while only the State Governments have direct dealings with the agriculturists the Central Government helps the State Governments with grants in aid and low-interest loans. A substantial part of the money thus received by the States from the centre is utilized for advancing loans to agriculturists for various approved purposes. The total grants and loans for the purpose of the Grow More Food campaign sanctioned by the Central Government since 1948-49 are given below¹ :—

	1948-49	1949-50	1950-51	1951-52	1952-53
Grants ...	62.1	68.8	109.6	70.5	63.6
Loans ...	23.2	88.2	176.2	199.5	146.2

The grants and loans from the Central Government are generally given on the condition that an equal amount is contributed by the State Governments.

The average for borrowing of cultivators from Government to the total borrowings amount to only 3%. "The proportion is less than 5% in roughly 2 out of every 3 districts, between 5 and 20% in roughly 1 out of every 5 districts ; and more than 20% in only 1 out of every 20 districts."

Suggestions for Improvement

The entire system requires a reorganisation. The Reserve Bank of India holds that Government machinery is not suited to serve as the source of normal finance to agriculture. On the other hand some economists suggest the opening of State Banks on the analogy of certain foreign countries. Dr. Qureshi had advocated the formation of State Banks having branches in every *tehsil* with a banking department to provide long-term credit on the security of land by issuing bonds and debentures. Such banks may be used by the Reserve Bank as its agents. The Land Revenue Commission, Bengal, which examined a proposal for establishing Government-controlled Agricultural Banks, opined that it might operate as a check on the normal outlook of national finance while Government management would be more expensive and the scheme would be financially impossible. The suggestion for State Bank should receive a more serious attention. Mr. Tardy has pointed out that in poor countries where the Government had to take a hand in the provision of agricultural credit, they had either granted direct loans or set up State Banks.

Besides the *taccavi* loans can be made to play a very useful part in certain spheres, e.g., (1) Government can use these loans

¹ *Readings in Agricultural Economics*, Vol. I. (Ministry of Food and Agriculture) 1954, p. 110.

to popularize agricultural improvement, (2) Difficulties of the famine can be mitigated by the great use of short-term *taccavi* loans and such loans should be made freely available in backward tracts where co-operative credit societies cannot be successful.

Hence, if the *taccavi* loans are to be of any use to the cultivators it is necessary that the administration of the *taccavi* loans should be made less rigid and delay in the granting of loans and the unfairness in the realisation of joint bonds should be remedied. Secondly, the facilities for borrowing from the Government and the conditions under which loans are advanced should be made more widely known to the public than at present.

4. Commercial Banks

The Commercial Banks, including the State Bank of India and the exchange banks play a little part in the direct supply of agricultural credit in India, *i.e.*, only one per cent of the total needs. These banks do not consider agricultural finance as part of their ordinary business because they are not organised to supply rural long-term credit or short-term credit needs. They, however, indirectly finance agriculture to a greater extent through merchants and dealers. This indirect financing on account of the intermediaries is very dear. Such financing is done by financing loans to merchants and commission agents on the security of agricultural produce stored in the places approved by them at 6 or 9 per cent in the movement of produce from *mandies* to the consuming centres to the ports. Stocks so pledged have to be insured against fire and the bank may also require insurance against additional risks such as floods; they are usually kept under the banks' lock and key and are subject to periodical inspection by the banks' officials. These stringent conditions coupled with the fact that in most large centres there are indigenous bankers from whom credit can be obtained at lower rates make the merchants under ordinary circumstances, extremely unwilling to approach the banks for credit.

The following table gives the amount of advance made by the Scheduled Banks to the various sectors of Indian economy. Whatever little that percolates to agriculture goes to the main commercial crops :—

SCHEDULED BANK ADVANCES

(In Million Rupees)

	31-12-53	30-6-54	31-12-54
Industry	1,665	1,929	1,909
Commerce	2,500	2,750	2,779
Agriculture	119	157	45

These banks cannot undertake the provision of long-term finance but even with regard to short-term finance the part they play is extremely limited, as the periods for which these loans are required by the farmers are usually longer than those for which the banks can safely lend. Commercial banks in towns do not possess sufficient expert knowledge to assess the value of the security offered by the farmer in the form of growing crops and livestock; these are also precarious forms of security inasmuch as their value might depreciate on account of factors over which the farmers have no control such as floods, diseases of livestock, etc. Nor is it easy for the commercial bank to maintain a close touch with the smaller farmer in the village. Thus the unsuitability of the agricultural security, the peculiarities of the agricultural finance, the seasonal vicissitudes and uneconomic nature of the industry, illiteracy, and the imperative necessity of keeping their funds liquid prevent them from undertaking this kind of finance.

As the Central Banking Committee has remarked so well, "The commercial banking system becomes slower the nearer it comes to the agriculturist and it stops entirely at the outskirts of the agricultural lines." But if appropriate credit instruments like the first class agricultural bills which the commercial banks are willing to accept as security can be developed, the commercial banks can be made to provide considerable amounts of short-term credit to agriculture. It is the considered opinion of the Central Banking Committee that the commercial banks should lend more liberally to the agriculturist on the security of gold, silver and ornaments, as this would save them from the clutches of the moneylenders.

Suggestions for Improvement

One of the means of encouraging commercial banks to develop their agricultural business is to give them a first charge on crops and all or any of the farming stock. This will have the effect of stopping finance from all other sources and can be justified if the banks are in a position to assume the role of the sole supplier of agricultural credit. By their very nature commercial banks are unsuited for this purpose. Thus though there does not appear to be an extended scope for the ordinary finance of agricultural operations by commercial banks in India, the conditions are much more favourable in the field of marketing finance. The volume of finance supplied by commercial banks to agriculturists for the purpose of marketing could be considerably increased by improving the arrangement for marketing of crops by (a) the grading and standardisation of staples and of contracts, (b) proper storage facilities and (c) the creation of properly regulated local as well as forward markets. The regulation of marketing by

special enactments providing for the licensing of brokers, regulating the conditions of their business, prohibition of illegal deductions, use of standard weights and measures, regularising market prices, maintenance of regular accounts of all transactions and giving of receipts to the sellers, publication of market informations, etc., will ensure proper marketing, reduce fluctuation of prices and marketing risks. These reforms will not only reduce the cost of marketing to the grower and ensure him a fairer price but will also encourage commercial banks to take a greater part in financing the sale of agricultural produce.¹

Thus we find that the role of the Commercial Banks and particularly Scheduled Banks in providing finance for agricultural purposes is entirely inadequate. The Scheduled Banks are concentrated mostly in larger cities and towns, and the smaller towns and rural areas are served by non-Scheduled banks, Co-operative Banks, and the Post Office Savings Banks. The Rural Banking Enquiry Committee have found that as many as 869 towns, including 492 places which are either district or taluka headquarters, do not have any banking facilities.

The Committee has recommended that efforts should be made to encourage the commercial banks to open new branches and to increase their operations in rural areas. But under the existing conditions branches cannot be established beyond taluka or tehsil headquarters, towns, mandies and other towns of commercial industrial importance. In smaller towns Co-operative Banks should be developed as (a) they have close contact with rural co-operative societies and (b) their cost of operation is relatively lower. The villages may be served by the co-operative societies.

In order to help the Commercial Banks to start their branches in rural areas, the Committee has suggested that (i) The existing impediments to banking expansion should be removed by building roads, developing rural communications, exempting these banks from the Shops and Establishments Act and from the award of Industrial Tribunals. (ii) These banks should be given indirect stimuli such as cheaper and freer remittance facilities from the Reserve Banks and its agencies, facilities of keeping their iron safe and chests for safe custody in the strong rooms of Treasuries and sub-Treasuries and ware-house facilities by building ware-houses through a Ware-Housing Development Board.

5. Loans Offices in Bengal

The Loan Offices in Bengal were originally started on the lines of land mortgage banks. They usually attract deposits at rates varying from 4 to 8 per cent. The main function of these

¹ Report of the Agricultural Finance Sub-Committee, p. 61.

offices is to lend money not only to landlords, but also to actual cultivators against the security of land as any other valuable. Personal security is also very popular with loan offices.

6. Nidhis

Besides these, there are to be found *nidhis* and Chit funds in Madras originally started as mutual loan societies. The *nidhis* have gradually developed into 'semi-banking' institutions. They take deposits either in the 'form of deposits proper or of withdrawable short capital paid in monthly instalments and they make loan for all purposes.' The objects of *nidhis* are the facilitation of savings, the relief of members from old debts and the accumulation of a fund for loans to members of all purposes.

Nidhis have several distinctive features which are of considerable value. They encourage thrift, mobilise small savings, promote corporate effort and inculcate in their members habits of punctuality and planning for future expenditure. But there are certain difficulties under which they labour. They are :—

(a) When a *nidhi* accepts the deposits from non-members the security for the depositor is naturally the share capital of the *nidhi*. But in a *nidhi* the members can borrow on security of their share subscriptions, and also terminate their membership at the end of the specified periods and withdraw their share capital. This greatly weakens the position of the depositor.

(b) Some of the *nidhis* do not conform to the Act under which they have been registered, *i.e.*, the Indian Companies Act.

The Central Banking Enquiry Committee have recommended the following measures if they are to play a considerable part in provision of rural credit in future as follows :—

(1) The *nidhis* willing to register themselves under the above Act should be allowed to retain the characteristic features of the *nidhis* as obtaining their working capital in the shape of monthly instalments, subscriptions to be paid up share capital advancing loans on the security of subscriptions to the paid up share capital and allowing the share capital to be withdrawn at the end of a prescribed period. Such *nidhis* should not be allowed to accept deposits from outsiders.

(2) The *nidhis* should be controlled by a special Act called "*Nidhis & Chit Funds Act.*"

(3) The *nidhis* not willing to come under the provisions of the above Act and desiring to accept deposits from outsiders

should conform fully to the provisions of the Indian Company Act, and prohibit the withdrawal of the share capital or the advance of loans on its security.

7. Chit Fund

The "Chit Fund" is a loose organisation of a small number of people and serves as a very useful mechanism for facilitating savings which are pooled together to be used by the members in the various ways. The Chit Fund exists in the south and south-east of the Madras State. This system is based on association, confidence and honest dealing. In absence of regular banking institutions to facilitate saving and provide cheap credit the chit system has been of immense benefit to the people especially in the rural areas. The system not merely promoted thrift among the subscribers but also enabled them to get *lump sums* for purchasing land, jewellery, for marriages, for trading operations and settling prior debts.

Agricultural Credit Corporation

Private credit institutions participating in agricultural finance have not yet developed much in India. The co-operative movement also is not in a position to meet all the rural requirements of credit. It is, therefore, necessary to provide a new source of finance on reasonable terms as an alternative to the present moneylender. The Gadgil Committee, therefore, recommended that such a financing agency should be an autonomous Public Corporation established by the State and working under its general supervision and direction. At least half of the share capital should be provided by State and the rest should be supplied by joint stock banks, co-operative credit and marketing organisations. Such corporations should be set up in all States with the exception of those where the Government feel that co-operative financial agencies are so strong and have such a large field of activity that they can make finance available to all credit-worthy borrowers.

The Corporation should provide all types of agricultural credit. Its methods of business should be similar to those of any other institutional agency like co-operative bank. In providing finance to a borrower it should take into account the real assets owned by him as well as the nature of his business. The Corporation should deal with the more substantial cultivators directly. The smaller agriculturists should be persuaded to form themselves into co-operative societies or where this is not possible into borrowers' groups, which would collect applications for loans and also the required information for borrowers in the locality concerned and transmit them to the lending agency. The Corporation may finance co-operative organisations in two cases,

viz., (1) where appropriate co-operative banking institutions do not exist, and (2) where although co-operative banking institution exist, they do not possess sufficient financial resources, care being taken in the latter case to give financial assistance only through the existing apex banks.

The Corporation should provide short-term finance at a rate of $6\frac{1}{2}$ per cent and long-term finance at 4 per cent which appear to be proper under upper limits for seeds advances. The Corporation will require a certain amount of State assistance in meeting the needs of all agriculturists at these low rates. Such State assistance will chiefly be in the form of not expecting substantial or any return on the State capital and funds with the Corporation. For financing the less developed tracts the Corporation may require more substantial help from the State as the cost of administration and collection of loans as well as the risks connected with them will be large in those areas. The State may render the necessary assistance by such means as allowing free use of State funds or directly subsidizing cost of administration of supervision, etc.¹

These suggestions found little acceptance with co-operators because of the following reasons :—

(i) The setting up of the State subsidised corporation would injure the interests of the co-operative system. Instead co-operative movement should be strengthened. The Nanawati Committee on these very grounds did not favour the establishment of A. C. C.

(ii) For meeting the needs of the scattered individuals the branches of A. C. C. cannot prove a better agency, for the A. C. C. will not have experience of work and will be lacking in local contact with non-officials. Moreover, the establishment of a rival agency with Government support will impede the growth of the co-operative movement. When cultivators would be able to procure cheap finance from the A. C. C. they will not prefer to deal with co-operative societies.

(iii) According to the Co-operative Planning Committee, "an A. C. C. which does not provide adequate representation in the management to those in need of credit, is likely to be dominated by the leader."

(iv) Much time shall be lost in giving effect to the recommendations of the Gadgil Committee.

¹ *Report of the Agricultural Finance Sub-Committee*, pp. 82-5.

Rural Banking Enquiry Committee (1950)

In order to explore ways and means to develop banking facilities in rural areas the Government appointed a Committee which reported in 1950. According to this Committee the following are the impediments to the extension of banking facilities in these areas :—

(a) Agriculture, as organised at present in this country, is “a deficit” industry. Unless it is put on a sound basis, effective demand for banking facilities cannot develop.

(b) Another difficulty in the way of the development of rural banking is the lack of good communications. There are few roads and they are not all-weather ones.

(c) The illiteracy of the rural population and their inability to handle pass books, cheques, etc., retards development of banking habits.

(d) The conservation of the rural people does not allow them to entrust their funds to banks. Only time and literacy can correct this.

(e) It is pointed out that since rural people who have savings can always lend their money in the villages at high rates of interest, the present low rates of interest which banks can offer will not prove attractive to them.

(f) The opening of new branches by banks in rural areas is found to be difficult because of the high operating costs in relation to the earning capacity of such branches.

(g) It has been pointed out by the Imperial and other branches banks that agrarian legislation on the credit structure has proved a hindrance to the expansion of their activities in the country.

These impediments can be removed in the following ways :—

1. *Assistance to Banking Institutions.* (a) Facilities may be given for cheap remittance of funds from centre to centre in order to collect funds in the rural areas. (b) Arrangements should be made with the State Bank as well as with Government treasuries and sub-treasuries to convert and exchange notes and coins in rural areas. The number of offices of the States Bank should be increased and the functioning of treasuries improved. (c) Facilities should be given to the banks to keep their chests for safe custody in the strong rooms of treasuries and sub-treasuries. (d) A Ware-housing Development Board with funds contributed by the Central and State Governments and the Reserve Bank should be established for developing ware-housing facilities.

2. *Special Proposals regarding Co-operative Institutions.* At present co-operative institutions enjoy certain concessions, such as exemption from income-tax, stamp duties and registration fees, free audit and supervision, etc. It is suggested that they should be given still more concessions to encourage their expansion, such as : (a) Facilities for remittance of funds through post offices at lower rates. (b) Permissions to deposit bigger sums in post offices, to withdraw a bigger maximum and more frequently per week. (c) Appointment as authorised agents for sale of National Saving Certificates. (d) Grant of subsidies to meet the cost of approved trained staff for places where no banking facilities exist at present. (e) Co-operative banks and societies should devote greater attention than in the past to the promotion of thrift and collection of savings.

The more important recommendations of the Committee were :—

(1) The Reserve Bank should establish its offices in the capitals of all major States in the Union and increase the number of currency chests of its Issue Department. (2) The State Bank of India should extend its branches to the *taluka* or *tahsil* towns, where these do not exist at present and where the volume of Government business and business potentialities warrant such extension. (3) Commercial Banks and Co-operative Banks should be encouraged to open branches in *taluka* towns and smaller towns. (4) The services of postal savings banks should be improved and more fully utilised. (5) The co-operative institutions should be strengthened and given special assistance. (6) Exchange and remittance facilities should be made available on a larger scale and over a wider area than at present, and the latter should be offered to Commercial Banks, Co-operative banks and societies and indigenous bankers on easier terms to encourage them to expand into the interior. (7) A Ware-housing Department Board with funds contributed by the Central and State Governments and the Reserve Bank should be established for developing ware-housing through loans and subsidies to banks and co-operative institutions. (8) The Reserve Bank should be appointed as banker to all Part B States ; the bank is to appoint its agents in each State for the management of cash work of Government. The Committee also recommended that steps should be taken for the removal of impediments such as illiteracy, lack of communication, restrictive legislation, etc., which now hamper the growth of banking institutions. The Committee further proposed that the offices of banks situated in towns having a population of less than 50,000 should be excluded from the operation of the Shops and Establishments Acts in the States and from the awards of the Industrial Tribunals.

Planning Commission's Scheme

The problem of agricultural requirements has been duly considered by the Planning Commission. It has made suggestions for increasing the supply of short-medium and long-term finance to rural areas. The Commission has fixed an ultimate target of Rs. 100 crores per annum for short-term agriculture finance to be disbursed through co-operative and Government channels. For the immediate future a target of Rs. 5 crores, spread over the remaining years of the plan, to supplement the resources of Co-operative Banks and other credit agencies has been laid down as an interim arrangement. The target of medium-term finance, both Government and co-operative has been fixed at Rs. 25 crores per annum by the end of the planning period.

It has been laid down that during the Second Five Year Plan, the active membership of primary agricultural credit societies should be raised from 5 to 15 million and the amount advanced through the co-operative movement is short-term loans from Rs. 30 to 150 crores, as medium-term loans from Rs. 10 to 50 crores and of long-term loans from Rs. 3 to 25 crores.¹ There is a fair chance of attaining these targets ; but the degree of success that will be attained will depend on the extent to which the many agencies participating in this great endeavour appreciate their respective roles and play them effectively.²

Need for a Separate Department for supplying Rural Credit

^{Many} In spite of the numerous credit agencies which supply Indian agriculture with finance the problem of agriculture credit in India remains acute, and continues to tax the imagination and resources of legislators, economists and reformers for a practical solution. An uneven and unequal distribution of agricultural credit is a striking phenomenon. Plethora of funds are lying idle in some areas while others are suffering from paucity of credit provisions. Really speaking the present distribution of credit facilities reminds one of the excessive concentration of rain water in certain regions, while simultaneously, there is a drought elsewhere. If man were to co-operate with nature on an adequate scale in many cases a more rational distribution of the available water through a system of irrigation canals would be possible and prove advantageous to regions suffering from scarcity of water as well as to the flood-stricken areas. What we need most in the field of credit today is, so to say, a system of better financial irrigation.³

1 *Second Five Year Plan—Draft Outline*, 1956, pp. 71-72.

2 *Review of the Co-operative Movement in India*, for 1952-54, (1956), p. 182.

3 N. P. C. Report, *Rural Finance and Marketing*, 1948.

The inelastic character of the supply of agricultural credit is evidenced by its lack of adjustment to the seasonal variations in demand. The various credit agencies are loosely organised without any co-operation and co-ordination among them. The consequence is unequal distribution of various credit facilities, fluctuations and variations in rates of interest, form of security and of methods of payment, collection and realisation. Hence, if the farmers in India are to be provided with cheap credit the supply of credit should be rendered elastic. For this it is essential that the agency providing rural credit must have a central institution from which they could borrow in times of stringency on the security of agricultural paper. At the same time an agency has long been needed in India which would undertake research in all problems relating to agricultural credit and would offer technical advice to the Central and State Governments, on all matters relating to the measures for the provision of agricultural credit. Best suited to undertake these duties is naturally the Central Bank of the country. The establishment of the Reserve Bank of India constituted a landmark in the history of agricultural credit in India.

Agricultural Credit and Reserve Bank of India

The part which the Reserve Bank of India is playing in organising agricultural credit should be considered in the light of Indian conditions and also in the light of the operations of Central Banks in agricultural countries. By the constitutional provisions of the Reserve Bank of India Act the Bank was required to create a special Agricultural Credit Department. Clause 54 of the Reserve Bank of India Act required the Bank to create a special Agricultural Credit Department, "(a) to maintain an expert staff to study all questions of agricultural credit and be available for consultation by the Governor-General in Council, Local Governments, provincial Co-operative Banks and other banking organisations, (b) to co-ordinate the operations of the Bank in connection with agricultural credit and its relations with Provincial Co-operative Banks and any other banks or organisations engaged in the business of agricultural credit."

Provision was also made for the Bank to make loans and advances to the Provincial Co-operative Banks and through them to the co-operative movement on the security of agricultural paper, the promissory notes of co-operative central banks and marketing societies, Government securities and debentures of approved land-mortgaged banks which are trustee securities and are readily marketable. Duty was laid on it to submit a report before the 31st December, 1937 with proposals, if it thought fit, for legislation on how to extend the provisions of the Act applying to scheduled banks, to indigenous bankers and persons engaged

in India in banking business and to improve the machinery for dealing with agricultural finance. The department is, therefore, the agency for research work in agricultural finance, and it has to give advice in this connection to persons and institutions as may seek it from the bank. It is not directly entrusted with funds. Consequently it has its own limitations.

The Department has collected a great deal of material pertaining to agricultural finance in India as well as abroad. It has issued a number of bulletins and two reports in which the special features of agricultural finance have been described. It has given suggestions in its reports for the regulation of moneylending and for the reorganisation of the co-operative movement so that it may play a proper part in supplying agricultural credit facilities to the agriculturists. It has laid emphasis on the starting of multi-purpose societies and it published the Review of the Co-operative Movements in the country, in 1939-40 and another for a period from 1939-46 in 1946 and third for 1946-48 in 1950 and the fourth for 1948-50 in 1952, fifth for 1950-52 in 1955 and sixth for 1952-54 in 1956. It has also issued circulars from time to time in which it has embodied its proposals for improving agricultural finance. It has also collected materials on Debt Legislation in India and offered its advice on debt relief measures passed in the States. It keeps in close touch with the co-operative movement and deposes its officers to study on the spot the special features of the movement in different parts of India. The officers of the Department are also in close touch with the other agencies engaged in the supply of agricultural finance. Besides, it gives technical advice and guidance on all matters concerning agricultural credit to the Central and State Governments, to the Registrars of Co-operative societies, and to Co-operative Banks and other banking organizations when such advice is asked for.

Recent Efforts of the Reserve Bank towards Improvement of Agricultural Finance

Under Section 17 (2) (b) of the Act, as amended, the statutory period of accommodation has been increased from 9 months to 15 months. Under it the Reserve Bank can purchase, sell and rediscount bills of exchange and promissory notes drawn and payable in India and bearing two or more good signatures, one of which shall be that of a Scheduled Bank or a State Co-operative Bank, and drawn or issued for the purpose of financing seasonal agricultural operations or the marketing of crops and maturing within 15 months from the date of such purchase or re-discount exclusive of the days of grace. In actual practice accommodation under this section is normally granted for a period of 12 months, though in special cases the period has been extended to 15 months.

As a result of this amendment greater facilities would be available to agriculturists.

Another concession has also been given to co-operative institutions by amending the Section 17 (2) (a) of the Reserve Bank of India Act relating to the re-discounting of bills arising out of *bona fide* commercial or trade transactions. Under the said amended section, re-discounting facilities which had so far been confined to scheduled banks only have now been extended to Co-operative Banks also.

With the amendment to the Reserve Bank of India Act in 1951 and 1953, the functions of the Reserve Bank in the sphere of rural credit have been further enlarged. The amending Acts extend the scope of the expressions "seasonal agricultural operations and the marketing of crops" to include mixed farming activities and the processing of crops by agriculturists or their organisations. The period of short-term accommodation has been extended to fifteen months and the Bank is empowered to grant medium-term loans up to a maximum period of five years on the guarantee of the State Governments subject to two conditions: (i) that the limit of such loans for each State Co-operative Banks should not exceed its own fund and (ii) the total for all the State Co-operative Banks should not exceed Rs. 5 crores in the aggregate.¹

Further commercial papers of Co-operative Banks have been made eligible for re-discount at the Reserve Bank and the financing of the production and marketing activities of approved cottage and small-scale industries has been permitted on the strength of two good signatures.

Since 1942 the Reserve Bank of India has been providing concessional finance to the Co-operative Banks for the marketing of crops at 1 per cent below the bank rate. In 1944, this concession was extended to cover seasonal operations also. In 1946 the rebate was raised from 1 per cent to $1\frac{1}{2}$ per cent. This concession is even now continuing undisturbed—even though the bank rate has been raised from 3 per cent to $3\frac{1}{2}$ per cent. Thus the Reserve Bank of India is supplying finance for agricultural purpose at $1\frac{1}{2}$ per cent thus—giving a rebate of 2 per cent.

As pointed out earlier, the Reserve Bank provides short and medium term finance to co-operative banks through unsecured loans under Sec. 17 (2) (b) and 17 (4) (c) for financing agricultural operations and the marketing of crops and secured advances

¹ The limits in respect of each State Co-operative Bank and the over-all limit for the country as a whole have been since removed by a further amendment of the Act in 1955.

under Sec. 17 (4) (a) against Government securities and land mortgage bank debentures. The following table shows the advances made by the Reserve Bank to the State Co-operative Banks :—

ADVANCEES OF THE R. B. TO THE STATE CO-OPERATIVE BANKS.
(In Crores of Rs.)

Year	Under Section 17 (2) (b)	Under Section 17 (4) (a)	Under Section 17 (4) (c)	Under Section 17 (4) (a) ¹	Total
1947	0.02	...	...	...	0.02
1948	0.04	1.17	0.02	...	1.22
1949	1.21	5.73	.	...	6.94
1950	2.14	2.30	0.95	...	5.38
1951	1.49	5.29	2.66	...	9.43
1952	0.97	3.59	6.50	...	11.05
1953	0.31	6.46	6.69	...	13.46
1954	0.60	9.43	6.89	...	16.92
1955 ²	0.52	10.83	10.26	0.41	21.99

During 1954, 889 loans were made by the R. B. of India to the State Co-operative Banks at the preferential rate of $1\frac{1}{2}$ per cent for financing agriculture and for marketing of crops amounting to Rs. 16 crores as against Rs. 13 crores in 1953, Rs. 10 crores in 1952, Rs. 9 crores in 1951, Rs. 5 crores in 1950 and Rs. 2 crores in 1949. In addition to the 889 loans, the R. B. made 24 loans to the Co-operative Banks in 1954 totalling Rs. 40 lakhs for bonafide commercial transactions and are loan for Rs. 10 lakhs for general banking purposes.

During 1955-56, there was an increase in the scale of assistance provided by it for seasonal agricultural operations and marketing of crops at the concessional rate of 2% below the bank rate. Thus 19, State Co-operative Banks were given assistance aggregating to Rs. 29.64 crores in 1955-56 as compared with Rs. Rs. 21.21 crores sanctioned for 15 banks in 1954-55. The medium term loans sanctioned by the R. B. during 1955-56 amounted to Rs. 1.40 crore.

In addition to this, certain other concessions have been given by the Reserve Bank to Co-operative Banks. In the past the Co-operative Banks had to repay all loans to the Reserve Bank by a fixed date, viz., 30th September every year. Thus they had to face certain difficulty. But now the Reserve Bank allows all loans

¹ Given Since February 1955.

² Provisional.

taken by Co-operative Banks to run for their full period with the condition that the total loan outstanding at any time should not exceed the credit limit fixed for any year for the institution concerned.

Moreover, the credit limit so fixed by the Reserve Bank for the Co-operative Banks has been made flexible. The position formerly was that limit once utilised by the Co-operative Banks could not be re-utilised after re-payment, even within the year to which the sanction related, without the fresh approach to the Reserve Bank. But now the limit can be operated upon as a kind of cash credit account, *i.e.*, by drawing on the same and re-paying as and when convenient.

In spite of these concessions and greater facilities provided by the Reserve Bank, the credit limits allowed and the actual extent to which they have been utilised have been very modest so far as revealed by the table given below¹ :—

AGRICULTURAL CREDIT SUPPLIED THROUGH CO-OPERATIVE BANKS

Year	Amt. Sanctioned (In million rupees)	Amt. Drawn
1946-47	0·7	
1949-50	21·4	
1950-51	76·2	53·7
1951-52	124·0	121·1
1952-53	124·2	119·0
1953-54	163·2	147·1

The benefit of these advances was derived mostly by two States—Madras and Bombay—which have an organised co-operative movement.

On the recommendation of the Rural Banking Enquiry Committee, the Reserve Bank has liberalised the facilities for remittance of funds for Co-operative Banks and has reduced the commission by 50 per cent with effect from September 1, 1951.

In addition to this the Reserve Bank has also now made efforts to provide long-term finance for agricultural purposes. In 1948 it agreed to contribute up to 10 per cent of the debentures, floated by Land Mortgage Banks provided they accepted certain conditions. In 1950 this limit was increased to 20 per cent. "The scheme was taken a step further in 1953. The Central Government set apart Rs. 1 crore out of the allotment of Rs. 5 crores for long-term capital agricultural credit under the

¹ *Review of the Co-operative Movement in India, for 1950-52* and *Ibid*, for 1952-54, p. 35.

Five Year Plan for the purchase of debentures issued by Land Mortgage Banks. In this connection, the Reserve Bank, in consultation with the Government of India have agreed upon a scheme of joint contribution to the debentures of Land Mortgage Banks up to 40 per cent of the issue or shortfall in public subscription whichever was less, one-half of the subscription being on behalf of the Government and the other half on account of the Reserve Bank. The Central Land Mortgage Banks using this facility, have, however, to agree to dispense loans for productive purposes up to amount not less than half the subscription by the Government and the Reserve Bank within one year." The following table indicates the total subscriptions made by the Reserve Bank to the debentures of Land Mortgage Banks :—

Year			Amount
1950-51	...	...	20.0 lakhs
1951-52	...	...	15.0 ,,
1952-53	...	...	16.89 ,,
1953-54	...	...	15.56 ,,

No doubt it is a small amount but a good beginning has been made and it is expected it would increase in the near future.

Rural Credit Survey Committee and its Recommendations

But the most important step taken by the Reserve Bank was the appointment of an expert Committee in August 1951, to organise a rural credit survey, as per the recommendation of an informal conference of co-operators, economists and administrators convened by late Shri B. Rama Rau, Governor of Reserve Bank. The Committee was asked not only to plan—organize and supervise the survey, but also to interpret its results and make recommendations. It consisted of Shri A. D. Gorwala (Chairman), Prof. D. R. Gadgil, Shri B. Venkatappiah and Dr. N. S. R. Shastri (Member-Secretary). The Committee duly undertook an All-India Rural Credit Survey covering nearly 600 villages in 75 districts all over the country selected on a random-sample basis from different homogeneous geographical regions and presented its report late in 1954 to reorganise rural credit in the country.

The main recommendations of the Committees are :—

The R. B. should collaborate with the State Governments, in drawing up plans for the co-ordination and reorganisation of co-operative credit institutions on the lines recommended. The share capital of State Co-operative Bank and land mortgage banks would be expanded on the basis of 51 per cent of the shares being held by the State ; similar partnership through the apex institu-

tions is provided for in the Central Banks and even large-sized primary institutions.

(a) The Committee recommends that the Reserve Bank should be empowered to make long-term loans to the State Governments on suitable terms, whenever necessary, to enable them to participate in the share capital of the State co-operative credit organizations. For this purpose the Reserve Bank should establish a National Agricultural Credit (long-term operations) Fund to which the Bank should make an initial allocation of Rs. 5 crores, and further annual allocations of Rs. 5 crores. The Fund would also be utilised for making long-term loans and advances, (*i.e.*, accommodation for periods exceeding 5 years) to Land Mortgage Banks, as also for purchasing "special development debentures" connected with specific projects of irrigation. In all these cases, both principal and interest be guaranteed by the State Government.

(b) The Reserve Bank should continue to give short-term accommodation on the guarantee of the State Government, through State Co-operative Banks. It should also give medium loans (of periods ranging from 15 months to 5 years) to State Co-operative Banks and through them to Central Co-operative Banks or Societies. The present overall limit of Rs. 5 crores should be removed as well as the restriction relatable to the owned funds of State Co-operative Banks.

(c) The Committee has also recommended for setting up another fund known as the National Agricultural Credit Stabilisation Fund to stabilise the co-operative system by ironing out fluctuations in its fortunes arising from farmers' temporary inability to repay the loans taken by them. The balances standing to the credit of this Fund will be utilised exclusively for making medium-term loans and advances to State Co-operative Banks to enable them to convert short-term credit into medium credit whenever necessary.

The integrated scheme of reorganisation of rural credit proposed by the Committee follows, directly from the chief features of the credit requirements, and is based on three fundamental principles of (a) State partnership at different levels, (b) full co-ordination between credit and other economic activities, and (c) administration through fully trained and efficient personnel, responsive to the needs of the rural people. The main features of the scheme are as follows :—

1. *Credit.* State Partnership, including financial partnership, in co-operative rural credit in order that such credit may not only

be expanded and strengthened for the positive purpose of production but for the positive benefit of the rural producer.

2. *Processing, Marketing Storage and Ware-housing.* State partnership, including financial partnership, for the benefit of the rural producer, in a programme for the organisation of processing and marketing on a co-operative basis and for the development of storage and ware-housing. The proposals in this connection include the creation of a National Co-operative Development and the National Ware-housing Development Fund to be maintained and administered by National Co-operative Development and Ware-housing Board.

3. *Other Economic Activities.* State Partnership, in a programme for the organisation on a co-operative basis of such other economic activities of the village farming, irrigation, provision of seed and manure, transport, fisheries, dairying, livestock-breeding and cottage industries.

4. *Commercial Banking.* Integration of, and the State's financial participation in, an important sector of commercial banking in order that the State-partnered, country-wide banking institution so formed may, among other things, be charged with and carry out the positive duty of endeavouring to do its best to help the development of rural co-operative banking.

5. *Training.* Recognition of the importance of training a new type of personnel altogether, which is not only technically qualified, but is also in its sympathies and attitudes rurally biased in order that the new functions devolving on the State by reason of the above may be discharged both efficiently and for the benefit of the rural population.

6. *Limitations on State Partnership and State Intervention.* Recognition of the need so to design the extent and manner of State-Partnership as to ensure that, while responsiveness to the new policies is effectively created, every precaution is taken to safeguard the essential character of the institution in which such participation takes place and nothing is done such as may lead to State interference in its day-to-day working, recognition further, so far as co-operative credit and co-operative economic activity are concerned, of the need so to regulate the extent of State partnership at different levels as (a) at the rural base to leave scope for the Societies to become fully "Co-operative within a measurable period by the process of themselves replacing the State part of the share Capital and (b) at the higher levels to retain what may be described as the major partnership of the State until such time, however long, as may be required in the interests of the co-operative organisation at the rural base which, before it develops

sufficient strength and for the purpose of developing such strength will need, against the competition and opposition of private vested interests and for various other reasons, a support which is at once powerful, sympathetic, financially adequate and technically competent."

The Government also proposed to establish a Central Warehousing Corporation with counterparts in all the States, and a Marketing Board, because in the ultimate analysis, warehousing and marketing would be more important than provision of rural credit.

Implementation of the Recommendations of R. C. S. Report

As per the recommendations of the Committee, the Government enacted the law in May 1955 to nationalise the Imperial Bank of India, which took effect from July 1, 1955. The other Banks are expected to be assimilated in due course by negotiation or through legislation. The new State Bank is charged with the duty of opening 400 branches in five years. State partnership in the expansion of agricultural credit facilities has thus been established with the establishment of the State Bank.

The Government has duly implemented these recommendations of the Committee by passing the Reserve Bank of India (Amendment Bill) in May 1955. The Reserve Bank has been authorised under this amendment—by the insertion of two new sub-Sections *viz.*, 46 A and 46 B to establish two funds; (a) the National Agricultural Credit (Long-term operation) Fund with Rs. 10 crores as against only Rs. 5 crores recommended by the Rural Credit Survey Committee. (b) The National Agricultural Credit (Stabilisation) Fund with Rs. 1 crore.

One of the common criticisms of the Bill during the debate was that the amount provided for both the Funds was inadequate. But this criticism was ably met by Mr. A. C. Guha, Minister for Revenue and Defence Expenditure in the course of his reply to the debate. He pointed out that out of the sum of Rs. 5 crores provided under sub-Section 4-A of Section 17 of the Act, for loans to Co-operative Banks—it was possible for the Reserve Bank to advance only Rs. 20 lakhs. "So it is no use," he added putting a bigger sum unless we can set up the appropriate machinery to utilise the sum. He further stated that the section referred to above set a maximum of Rs. 5 crores to the loan which the Bank could give to Co-operative Credit Societies. But now the Bill did not put any such maximum. On the contrary, it put a minimum below which this contribution should not go. He added that the

Government had already doubled the amount of the Long-Term Operation Fund, *i.e.*, made it Rs. 10 crores, though the Rural Credit Survey Committee had recommended only Rs. 5 crores. He assured the house that the Government would not be niggardly in this matter. It was, he said, earnest in helping co-operatives for providing agricultural credit.

The setting up of the two Funds (Long-term Operation Fund and Stabilisation Fund) with the Reserve Bank will enable the Government to provide assistance to the co-operative institutions at different levels.

The Central Committee for Co-operative Training—jointly constituted by the R. B. and the Government of India—is conducting a training Centre at Poona for training the higher personnel of the Co-operative Depts. For training the intermediate co-operative personnel, three regional, co-operative training institutions are functioning at Poona, Madras and Pusa, and two more have been started in Jan. 1956 at Indore and Meerut.

Special steps are being taken to bring about co-ordination in the implementation of the integrated programme of rural credit in various States. The Government of India had appointed a Committee in October, 1955 with a view to evolving a co-ordinated policy for rural credit development in order to avoid wasteful use of resources and duplication of efforts by different authorities. The functions of the Committee are : (1) to ensure adequate supply of credit resources for rural development and to avoid their wasteful use, (2) to exchange information about over-all and detailed plans of development and extension of rural credit, (3) to co-ordinate the provision of rural credit organised and sponsored by various agencies in the sphere of marketing, ware-housing and processing of agricultural produce, and (4) co-ordination of activities of the co-operative staff in the N. E. S. and Community Projects Blocks with the work of the other staff of the Co-operative Department in the States. The Committee is composed of 2 representatives of the Central Ministry of Food and Agriculture, 1 each of the Ministry of Finance, Production, C. P. Administration, Planning Commission and R. B. It is expected to be an important link joining all the various agencies which are connected with the development integrated of scheme of institutional credit as envisaged by the Rural Survey Committee.

CO-OPERATIVE MOVEMENT IN INDIA

Introduction

The Co-operative Movement in India has been a growth of about half a century and is largely dependent for its origin as well as development on the Government. Even before 1904 (when the movement was first officially set up), the Government was not unaware of the difficulties which the peasants and farmers were facing in borrowing funds and was anxious to ease the situation. As early as 1882 Sir William Wedderburn and Justice Ranade prepared a scheme for establishing the Agricultural Banks to provide loans to farmers. Their scheme was not accepted in the form in which it was presented; but its essential features were embodied in the Land Improvement and Agriculturists' Loans Act (XIX of 1883 and XII of 1884 respectively) under which the agriculturists could borrow from the Government for productive purposes at about 6 per cent.

In 1892, Fredrick Nicholson was appointed by the Madras Government to report on the advisability of starting a system of Agricultural and Land Banks in the Presidency. He submitted a very exhaustive report summing up the situation as "Find Raiffeisen." He suggested that "small locally worked institutions on the lines of European village institutions were ideal agencies for the supply of rural credit because they would satisfy the postulates of proximity, security, facility, excite local confidence and consequently draw in local capital, work cheaply, almost gratuitously and thus provide cheap credit, influence borrowers towards the true use of credit, and watch the utilisation of loans in accordance with the contract, exercise educative influence in matters of thrift, association and self-help, and develop high forms both of individual capacity, of public life and of national character." But his report was shelved. It was declared that it was unnecessary to take any action on it, as rural credit in the opinion of officials was not an urgent problem then.

In the meantime, H. Duperne had submitted another scheme under the title of "People's Bank for Northern India." The Committee appointed by the Government of India to consider these schemes came to the conclusion that the best way of providing loans to farmers was to start co-operative societies on the lines of Raiffeisen societies. The Famine Commission of 1901 strongly recommended that in order to prevent further famines,

it was essential that credit should be made available to the farmers to improve agriculture and that Mutual Credit Association should be started. This point was referred to a Committee in Simla, which in 1901 drafted a Bill for the establishment of Co-operative Societies under the presidentship of Sir Edward Law. After much discussion this new Bill took the form of Co-operative Societies Act of 1904. The passage of this Act formally inaugurated the Co-operative Movement in India.

The First Stage of the Movement

The Co-operative Credit Societies Act was passed on the 25th March, 1904. Its chief provisions were :—

(1) Any ten persons living in the same village or town or belonging to the same class or tribe, might be registered as a Co-operative Credit Society for the encouragement of thrift and self-help among the members.

(2) The main objects of the society were to raise funds by deposits from members and loans from non-members, Government and other co-operative societies, and to distribute the money thus obtained in loans to members, or with the special permission of Registrar, to other Co-operative Societies.

(3) The organisation and control of Co-operative Credit Societies in each province were put under the charge of the special Government officer called the Registrar of Co-operative Credit Societies.

(4) The accounts of every society were to be audited by the Registrar or by a member of his staff free of charge.

(5) Rural Societies were to have four-fifths of their members agriculturists ; urban four-fifths of non-agriculturists.

(6) The liability of the members of a rural society was to be unlimited, except with special sanction by the local Government ; liability of the urban society members might be either limited or unlimited.

(7) No dividends were to be paid from the profits of a rural society but the profits were to be carried at the end of the year to the reserve fund, although when this fund has grown beyond certain limits fixed under the by-laws, a bonus might be distributed to the members.

(8) In urban societies no dividend was payable until one quarter of the profits in a given year were carried to the reserve fund.

(9) Loans could be given only to members, and usually only on personal or real but not ordinarily on chattel security, although ornaments, the common form of savings of many peasants, might legally be accepted as security.

(10) The interest of any one member in the society's share capital was strictly restricted.

(11) Societies formed under the Act were exempt from fees payable under the stamp, registration and income-tax.

In the words of Sir Denziel Ibbotson the chief object of these societies was "to give encouragement to the individual thrift, and of mutual co-operation among the members, with a view to utilization of their combined credit, by the aid of their intimate knowledge of one another's needs and capacities and of the pressure of local public opinion."

In other words, the object was to encourage thrift, self-help and co-operation among agriculturists, artisans and persons of limited means.

Sir Adamson cherished this hope for the future of these societies in these words: "Our co-operative credit society is but a frail barque launched upon a treacherous ocean but if it can escape from being wrecked by the opposition of the moneylender, if it can avoid being stranded on the shoals of mutual distrust among its members it can carry safe to the port a portion of its cargo of self-help and members, if co-operation, it will some day rank as the most important bill ever passed by the Government for the betterment of the Indian agriculturists."

The following table gives us an idea of the growth of the credit societies in India as a result of the Act of 1904 up to 1912 :—

Year	No. of societies	No. of members	Amount of working capital in Rs.
1906-7	843	90844	2371683
1907-8	1357	149160	4414086
1908-9	1967	180338	8232225
1909-10	3428	224797	12168312
1910-11	5321	305058	20305800
1911-12	8177	403318	33574162

The Second Stage of the Movement

— The Act of 1904 provided for the registration of the Primary Credit Societies only. But the experience of 7 or 8 years' working showed that much progress could not be made in the supply of credit under it to the rural areas. It was for various reasons :

(i) It made no provision for purposes other than credit, i.e., marketing, supply, etc., or for the establishment of central agencies, such as Central Banks or Unions, necessary for the proper financing of Primary Credit Societies ;

(ii) The total prohibition of distribution of profits (in Madras and the Punjab) in rural societies with unlimited liability was found to cause some hardship to rural members ; and

(iii) The classification of societies into rural and urban was found to be extremely unscientific and inconvenient.

The Government realised these deficiencies and, therefore, passed a comprehensive Co-operative Societies Act in 1912, the distinctive provisions of which are given below :

(1) Instead of registration being limited to Credit Societies, any society may be registered "which has for its objects the promotion of economic interests of its members in accordance with co-operative principles, or a society established with the object of facilitating the operation of such society."

(2) Unless otherwise directed by the local Government : (a) the liability of the Central Societies shall be limited ; (b) the liability of the Rural Societies shall be unlimited.

(3) The requirement of an annual credit is retained as are numerous other provisions of the Act of 1904.

(4) Any registered society may, with the Registrar's sanction after carrying $\frac{1}{4}$ of the annual net profits to a reserve fund, contribute up to 10 per cent of the remaining net profit to a wide range of charitable purposes.

(5) Local Governments are given considerable discretion in connection with the making of rules for the working of societies under the Act, including conditions of membership, methods of operation, procedure at general meetings and provisions for arbitration between members and the committee or officers of the society, such rules to have the same force in the respective provinces as the Act itself.

(6) "Co-operation" may not be used as part of the title of any business concern not registered under the Act, unless it was already doing business under the name before the Act came into effect.

(7) Shares or interest in co-operative societies are exempt from attachment.

(8) Societies have a prior claim to enforce the recovery of certain dues.

The defects of the Act of 1904 were remedied by the new Act of 1912. This Act gave a great stimulus to the co-operative movement. It legalised many co-operative societies which had hitherto no legal recognition. Societies were now classified according as they were limited and unlimited. The Act also recognised non-credit forms of co-operation, such as societies for the purchase of supplies, for sale of produce, insurance and housing. It also recognised three kinds of Central societies as distinguished from primary societies, *viz.*, (a) Unions consisting of primary societies for mutual control and credit ; (b) Central Banks consisting partly of societies and partly of individuals ; and (c) Provincial banks consisting of individuals.

After 1912, there was a rapid growth not only in the number of co-operative credit societies but also in non-agricultural credit societies and in their membership. The development, of course, was not uniform in all the provinces ; it being more rapid in areas like Bombay, Madras and Punjab (where the agriculturist had mortgage rights in his land) than in the zamindari areas like Bengal (where the cultivator had little to offer except his personal security). The non-credit types of co-operation were also being gradually developed, so that societies for milk supply, sale of produce, cattle insurance, yarn, silk and manure purchase, retailing of farm implements and common necessities were also coming into prominence.

The Third Stage of the Movement

The movement entered into the third stage in 1914 when the Government of India appointed a Committee under Sir Edward Maclagan to "examine whether the movement especially in its higher stages and financial aspects was progressing on sound lines and to suggest measures for improvement which seemed to be required." The Report appeared in 1915. It is considered as a document in the annals of co-operative history. But unfortunately many of the very valuable recommendations made in this Report have not been scrupulously followed. The following points made in connection with Rural Credit Societies in order to make them truly co-operative may be studied with great interest and benefit :—

- (1) Knowledge of co-operative principles and proper selection of members,
- (2) Honesty is the chief basis of the Credit.
- (3) Dealings to take place with the members only,
- (4) Loans not to be granted for speculative purposes,
- (5) Exercise of careful scrutiny before advancing loans and proper vigilance afterwards,

(6) Ultimate authority to be in the hands of members and not in those of office-bearers,

(7) Encouragement of thrift and the constitution of an adequate reserve fund,

(8) Only one vote for one member and maximum publicity within the society,

(9) Capital to be raised as far as possible from savings among the members and neighbours,

(10) Punctual repayment of loans.

The searching enquiries by the MacLagan Committee brought to light a number of glaring defects which hampered the movement in its further development. The chief defects that were pointed out were :

(1) The illiteracy and ignorance of the masses created a number of serious difficulties in the way of management and supervision of the societies.

(2) The members of the Management Committee acted in a selfish spirit inasmuch as they misappropriated the bulk of the loans by means of *benami* loans, and were found guilty of criminal negligence of duty, of mismanagement and fraud.

(3) Nepotism in advancing loans to the near relations and friends of the Committee of Management. Punctuality was not rigidly enforced and this delinquency coupled with apathy stood in the way of other members getting adequate credit.

(4) The very notion that co-operation is a Government-born activity or the societies are "Sarkar's Banks" militated against the success of the movement. "When we think of co-operation in India we do not call to memory the humanitarian and philanthropic Raiffeisen but the mercenary Registrar of the Co-operative Societies"

(5) Much delay is caused in granting loans to the needy cultivators and this helps to drive them to the moneylenders.

The Committee very wisely warned against the starting of new societies by remarking that the pace of movement should not be unduly quickened from outside. It emphasized that the urge towards co-operation should be spontaneous as far as possible and pointed to the necessity of guarding against the dangers of granting credit too easily. It further emphasized the need for thorough audit and supervision in order to prevent bad management and embezzlement and to inspire confidence in the investing public. These very sound and valuable recommendations were honoured more often in their neglect than in their execution. The period between 1904 and the publication of the MacLagan Committee

Report in 1915 may be taken as "the period of initial effort and planning."¹

The Fourth Stage of the Movement

On the passing of the Government of India Act of 1919, co-operation became a Provincial subject and was administered by provincial Governments. This Act gave the option of retaining or modifying the existing Act of 1912 to the Provincial Governments. Some Provinces exercised the option given to them of enacting their own Provincial Acts and consequently they passed their own Provincial Acts, *e.g.*, Bombay gave the lead by passing the Co-operative Societies Act of 1925. This was followed by Madras in 1932 and Bihar and Orissa in 1935, Coorg in 1937 and Bengal in 1941. The other Provinces have been following the Central Act of 1912. The Act of 1919 gave great stimulus to the movement. Its success was measured more by its quantity than by its quality, but all seemed to be going on very well during those early prosperous days. The economic prosperity between 1920 and 1929 facilitated expansion and there was a rapid increase in the number of societies. But side by side with this expansion there were also some disquieting features, *e.g.*, a steady increase in overdues. These led to the institution by various Provinces of Co-operative Committees of Enquiry to enquire into the working of movement. The Central Provinces led the way with such an enquiry in 1922, and Bihar and Orissa in 1923. The Okden Committee in U. P., the Townsend Committee in Madras and the Calvert Committee in Burma made similar enquiries. The rapid growth of movement between 1919 and 1930 is characterised by Mr. Ramdas Pantulu as the period of "unplanned expansion."² The following table gives the progress of the societies during this period :—

Year	No. of societies	No. of members	Working capital (Rs. 000)
1914-15	... 17327	824469	122292
1916-17	... 23336	1048425	311225
1921-22	... 52182	1974290	311225
1923-24	... 61106	2313567	405297
1925-26	... 80182	3058625	576039
1927-28	... 96091	3070173	767087
1929-30	... 104187	4181904	895178

Unfortunately with the first onslaught of the Depression the fall in agricultural prices aggravated the situation and recoveries became difficult. The movement came to grief first in Burma and then suffered seriously in prestige in Bihar, Bengal and many

1 R. Pantulu, *Year Book and Directory of Indian Co-operation*, p. 1

2 R. Pantulu, *Op. Cit.*, p. 1.

other Provinces. Since then efforts are being directed more to the rehabilitation, reconstruction and reorganisation of existing societies than to further rapid expansion. The Co-operative Movement in India is passing through a phase of rectification and consolidation, cautious expansion and experiment.¹

When the Reserve Bank of India was established in 1935 it was asked to submit a report to the Government of India on the improvements of the machinery for dealing with agricultural finance and to maintain a special department for the study of all questions relating to agricultural credit. The introduction of the Provincial Autonomy in 1937 was followed by legislation for the regulation of money. The Depression in the early thirties of this century and the collapse of the movement in some Provinces as a result of it, led to the appointment of special experts and Enquiry Committees in different Provinces to examine the position of the co-operative movement and the fundamentals of co-operative structure with a view to reconstruction and in some cases permanent reorganisation.

During the period the development of co-operation is given as below :—

Year	No. of societies (000)	Membership (in lakhs)	Working capital (in crores of Rs.)
1931-35	... 105.71	43.22	94.61
1936-40	... 116.96	50.77	104.68
1941-45	... 149.19	72.18	124.35

Co-operative Movement during Post-War Period

The abnormal conditions created by World War II led to some far-reaching developments in the co-operative movement. There has been an over-all improvement. Between 1938-39 and 1945-46 the increase in the number of societies, the number of members and the working capital have been respectively 41 per cent, 70 per cent and 54 per cent. Also the movement touched 6 per cent of the population in 1938-39 but 10 per cent in 1945-46. The war stimulated the growth of Consumers' Stores and Marketing Societies. Many new types of producers' societies like Weavers' Societies, Milk Supply Unions, Motor Transport Societies, Fruit Growers' and Cane Growers' Associations, etc., were formed during the war period. The credit societies extended their functions and the movement manifested its multi-purpose potentialities. Loan repayments were accelerated, turnover was brisk and working capital registered a substantial increase though not in proportion to the war-time inflation which means that a unique opportunity of augmenting working capital by increasing members' deposits was lost. Thus during the war, "with a large turnover, accelerated,

1 Reserve Bank's *Review of the Co-operative Movement in India*, (1941), p. 4.

payments and shrinkages in the overdues the societies gained in strength and vigour." There was a temporary decline in the figures consequent on the partition, but the progress made subsequently has been so appreciable that the figures for 1949-50 had exceeded even the total for undivided India in 1945-46, the number, membership and working capital during 1949-50 had increased by 0.5 per cent, 37 per cent and 42 per cent respectively over 1945-46 figures.

The co-operative movement made remarkable progress after 1947, as would be clear from the number of societies, their membership and their working capital :—

Year	No. of Societies of all types (000)	Membership of primary societies (in lakhs)	Working capital of societies of all types (Rs. in crores)
1945-46	172.17	91.63	164.00
1946-47	139.14	91.01	156.01
1947-48	149.77	101.17	171.06
1948-49	163.88	127.07	219.49
1949-50	173.09	125.61	233.10
1950-51	181.19	137.15	275.85
1951-52	185.65	137.92	306.34
1952-53	189.44	143.16	327.10
1953-54	198.60	151.80	351.79
1954-55	219.28	160.20	390.52
1955-56	240.39	165.00	468.82

It will be seen that the number of co-operative societies went up during 1951-52 to 1954-55 from 185.65 thousands to 219.28 thousands, representing an increase of 18%. Membership also creased by 17%, from 137.92 lakhs to 160.20 lakhs and the working capital of all the societies rose from Rs. 306.34 crores to Rs. 390.52 crores *i.e.*, an increase of 26%. The number of societies represented an increase of 9.6% and the working capital an increase of 20.1% over 1954-55 figures.

Classification of the Co-operative Societies

A proper classification of the co-operative societies is essential for three reasons : *Firstly*, it facilitates the study of the principles that should govern the working of the different kinds of societies. *Secondly*, it enables an easy study of the progress made by the different types of co-operative societies in different regions through independent and comparative study. *Thirdly*, it can help the propagation of certain theories and notions.

In India, the Reserve Bank has made the following classification : (A) (i) Credit Societies, (ii) Purchase and Purchase and Sale Societies, (iii) Production Societies, (iv) Production and Sale Societies, (v) others.

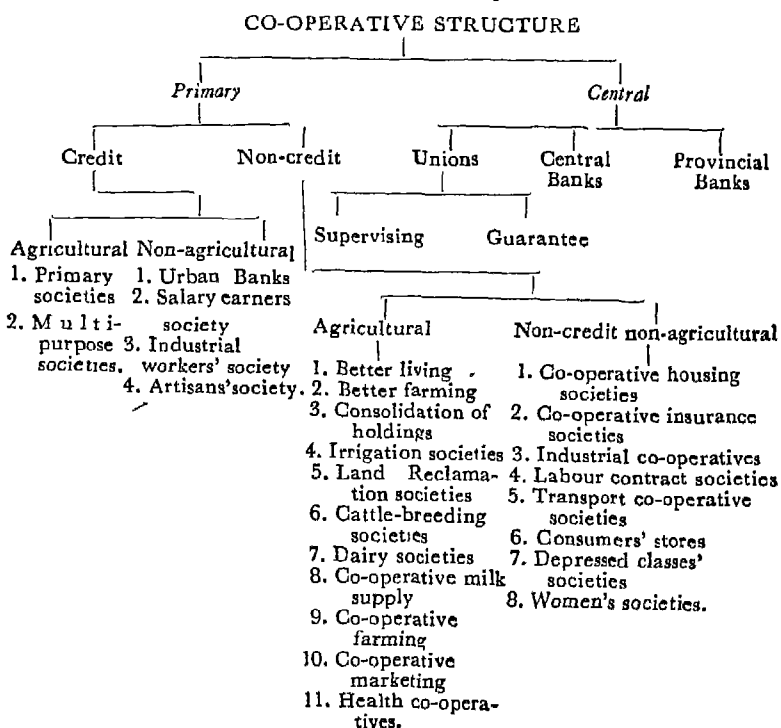
(B) Land Mortgage Banks.

(C) Non-Agricultural Societies, (i) Credit Societies, (ii) Purchase and Purchase and Sale Societies, (iii) Production Societies, (iv) Production and Sale Societies, (v) Others.

(D) Insurance Societies : (i) Ordinary and (ii) Cattle.

Co-operative Societies in India can be broadly classified under two heads : Primary and Central. While the primary societies deal directly with the members, the Central Societies including Unions, Central Banks and Provincial Banks, extend help to primary societies. The primary societies are further classified as Credit Societies and Non-Credit Societies. In both these categories there are Agricultural and non-agricultural societies. Agricultural Societies are those in which the majority of the members are agriculturists ; whereas non-agricultural societies are those which are not agricultural in character.

The chart given below, showing the classification of the co-operative societies, will give a clear idea of the complex co-operative structure that has been built up in India :—



(a) Agricultural Societies

1. *Agricultural Credit or Primary Societies* are those which provide credit to their members and encourage the habit of thrift. At the other end of the Credit Societies are the State Banks which link the rural areas with the money markets of the country, and have their head-quarters at the capital towns of the state. Between these two extremes are the Banking Union and the Central Banks. Generally Speaking Primary Co-operative Credit Societies are linked with the Banking Union or the Central Bank and the Central Bank is linked up with the State or Apex Bank.

The Primary Societies are confined to small villages, the Central Banks to *taluka* or district towns and the State Banks are at the head quarters of the State. If a borrower in a village needs money, he applies to his Society. If the Society is short of funds ; it applies to the Central Bank, and if the Central is in need of fund, it applies to the State Bank. That is why it is said that the co-operative movement links the farmer in the remote villages with the money markets of the country. The primary societies besides loaning funds to its members also encourage thrift and act as agent for the sale of its member's produce and joint purchase of their agricultural and domestic requirements—for hiring implements, machinery or animals to members, the dissemination of information of about improved farming practices, the encouragement of subsidiary industries.

2. *Agricultural Non-Credit Societies*. These societies deal with the sale and marketing of goods, consolidation of holdings, better farming and better living, insurance of cattle, supply of seeds, cattle breeding, co-operative farming, irrigation, milk and dairy products, ghee, poultry and eggs, crop-protection, colonisation and crop insurance, etc.

B. Non-Agricultural Societies

These societies may also be conveniently classified into credit and non-credit societies.

1. *Non-Agricultural Credit Societies* are called *Urban Banks*. They provide credit to workers and artisans. They have no separate State or Apex Bank of their own, though they have their own Central or District Banks.

2. *Non-Agricultural Non-Credit Societies* include Employees' Societies, Consumers' Stores, Thrift and Life Insurance, Housing, Artisans and Weavers Societies, Milk Societies, Communal Societies, Societies for Factory Workers, Depressed Classes and for women.

The following table shows the progress of both the Credit and non-Credit Societies in India :—¹

	No. (000)	% to the total	No. (000)	% to the total	No. (000)	% to the total
	1848-49		1951-52		1954-55	
<i>Credit Societies :</i>						
1. Agricultural	112.34	68.95	117.01	64.3	143.32	69.3
2. Non-agricultural	7.03	4.32	7.96	4.4	9.34	4.3
Total	119.37	73.27	124.97	68.7	152.66	73.6
<i>Non-Credit Societies :</i>						
1. Agricultural	22.76	13.97	35.29	19.4	30.19	15.6
2. Non-agricultural	20.71	12.76	21.65	11.9	24.26	10.8
Total	43.55	26.73	56.94	31.3	54.45	26.4
Grand total	162.92	100.00	181.91	100.0	207.11	100.0

These figures reveal that agricultural credit societies continue to constitute the largest number of societies, and their percentage to the total rose from 64.3 in 1951-52 to 69.3 in 1954-55. The increase in their numbers had been partly due to the registration of new Societies in U. P., Punjab, M. P. and Orissa.

The latest "Statistical Statements relating to the Co-operative Movement in India for the year 1954-55," says that at the end of 1954-55, there were 2,19,288 co-operative societies of all types, with a membership of 16.02 million and an aggregate working capital of Rs. 390.52 crores as against 1,98,598 societies with a membership of 15.18 million and a working capital of Rs. 351.79 crores in 1953-54. Taking the average size of an Indian family as 5 members, approximately 801 lakhs or 21 per cent of the population had been brought into co-operative movement as against 759 lakhs or 20.2 per cent in 1953-54; 19.2 per cent in 1952-53 and 18.8% in 1951-52.

1. Primary Societies. Primary Co-operatives constitute the backbone of the Co-operative Movement in India. Of the total number of 219,288 co-operative societies of all types in 1954-55, the primary societies accounted for about 98%. The primary societies are overwhelmingly of credit type. In 1954-55, 151,714 of these societies dealt with credit—143,320 with agricultural credit and 9348 with non-agricultural credit. Of the remaining societies, 30,197 were agricultural non-credit societies and 24,266 belonged to non-agricultural non-credit type.

1 *Review of the Co-operative Movement in India, 1952-54 (1956)*, p 5

The following table gives an idea of the progress which the primary societies are making¹ :—

LOAN TRANSACTIONS OF PRIMARY SOCIETIES

Particulars	1950-51	1951-52	1952-53	1953-54	1954-55
1. Loans advanced during the year	86·57	97·95	95·86	103·95	111·15
2. Loans recovered during the year	72·66	84·57	86·37	92·51	99·15
3. Loans outstanding at the end of the year	83·86	97·29	106·09	117·65	128·34
4. Overdues at the end of the year	9·78	13·09	16·38	18·26	21·81
5. Percentage of overdues to loans outstanding at the end of the year	11·7%	13·5%	15·4%	15·5%	17·0%

During 1954-55, there was an increase in the loans advanced by these societies. This became possible on account of larger credit facilities made available to the co-operative institutions by R. Bank, the Government and State and Central Co-operative Banks. Overdues also showed an upward trend, being 17%.

2. *Central Co-operative Banks and Banking Unions.* The main function of the C. B. and B. Unions is to advance money to the primary societies. They also undertake the supervision of their primary societies and they also do other banking business and advance loans to individuals against real property. The number of C. B. including B. U., fell from 505 in 1952-53 to 499 in 1953-54 and 485 in 1954-55. The decrease in number was mainly due to the policy of rationalization of C. B. pursued in certain States, e.g. in Hyderabad, the number decreased from 41 to 28, while in H. P., 4 B. U. were merged with the State Co-operative Bank. The total advances made by these Banks recorded an increase from Rs. 64·70 crores during 1953-54 to Rs. 69·17 crores during 1954-55. The membership, paid up share capital and reserves stood at 272,000 Rs. 6·91 crores and Rs. 6·14 crores respectively at the end of June 1955.

¹ *India*, 1957, p. 265.

Their working capital aggregated Rs. 73.69 crores. The composition of the working capital is shown below :—

Particulars	% of Working Capital				
	1950-51	1951-52	1952-53	1953-54	1954-55
Owned Funds	15.7	16.3	17.4	17.9	17.7
Deposits	67.0	63.6	63.9	62.3	62.9
Other funds	17.3	20.1	18.7	19.8	19.4

The loans advanced by the Central Co-operative Banks increased from Rs. 64.70 crores in 1953-54 to Rs. 69.17 crores in 1954-55, although there was a slight decline of Rs. 0.89 crores in the advances to banks and societies. The outstandings against individuals and against banks and societies totalled Rs. 3.18 crores and Rs. 39.71 crores respectively. The percentage of overdues to outstandings was 24.5 in respect of individuals and 17.9 in respect of banks and societies. The investments of surplus funds of Central Banks amounted to Rs. 19.88 crores at the end of 1954-55 as against Rs. 18.84 crores in 1954.

Certain disquieting features stand out as a result of the review of the working of the Central Banks. *Firstly*, the share capital, structure of the Central Banks is rather weak. It is, therefore necessary that these banks should emphasise more on having strong share capital and a strong reserve fund. *Secondly*, these banks do not take adequate steps to tap deposits available within their jurisdiction, majority of them are dependent on the State Banks. Therefore, in future their policy should be to attract more and more deposits at competitive rates. *Thirdly*, the banks have not made sufficient provision of reserves against bad and doubtful debts. Hence, in future they must create bad debt reserves. *Fourthly*, it is a gloomy situation to find that the interest rates are still high. Agriculture can have little attraction for the small farmer, unless he is able to raise his seasonal loans at a low rate of interest. *Finally*, the reserve funds should be constituted out of realised net profits and should be invested outside the movement in unencumbered trustee securities, other than mortgages of immovable property.

3. *State Co-operatives or Apex Banks.* They are the final link in the chain between the small scattered primary societies and the money market. They act as a clearing-house for capital, pool the resources and canalise the surplus of one locality to meet the deficiency of another to the advantage of the State as a whole.

About the functions of these banks the Reserve Bank observes, "The State Bank is the apex bank of the movement in a State. It acts as the clearing and balancing centre for the central banks by transferring surplus funds of one locality to another and serving as a channel for the remittance of funds. It is able to attract funds for the movement at lower rates and from

a wider area than is possible for the central banks and to invest the surplus funds of central banks in the commercial market when necessary, with greater facility than they would manage to do themselves. The State bank may also co-ordinate the working of co-operative, central and urban banks in the State in such matters as the borrowing and lending rates, the rates for collection of various documents, besides advising the banks generally in regard to the efficient conduct of their business.

There were 24 State Co-operative Banks at the end of June 1955, as against 22 in 1954. The S. C. B. were functioning in all Part 'A' States, in all Part 'B' States and in 6 Part 'C' States. An important feature of all new S. C. B., as also some of the reconstituted ones like Punjab, Hyderabad and Mysore, was the substantial State participation in their share capital, which helped in strengthening their capital structure. During 1954-55, the apex banks advanced loans to the extent of Rs. 50.24 crores as against Rs. 51.77 crores at the close of 1953-54. The membership of the Apex Banks increased from 32,883 to 36,294. Their paid up share-capital and reserves stood at Rs. 3.23 crores and Rs. 3.31 crores respectively at the end of June 1955. The outstandings at the close of 1954-55 amounted to Rs. 24.41 crores and the overdues increased to 3.91 crores. In 1955-56, there were 24 Apex Banks and their paid-up share capital and reserves stood at Rs. 4.37 and Rs. 3.28 crores.

(A) Agricultural Societies

1. Credit Societies

The number of agricultural credit societies, which constitute the base of the co-operative credit structure in the country, increased from 126,954 in 1953-54 to 143,320 in 1954-55 and to 159,939 in 1955-56, and constituted 78.8% of the total number of agricultural societies. Their membership and working capital correspondingly increased from 58,49,380 and Rs. 54.41 crores in 1953-54 to 65,65,416 and Rs. 62.93 crores respectively during 1954-55. The total advances made by the societies stood at Rs. 35.48 crores in 1954-55 and to 77,99,850 and Rs. 79.10 crores in 1955-56 as against Rs. 29.64 crores in 1953-54. The loans advanced by these societies amounted to Rs. 35.48 crores during 1954-55, as against Rs. 29.64 crores during 1953-54. Loans outstanding at the end of 1954-55 stood at Rs. 48.53 crores. Overdues mounted up from Rs. 12.03 crores or 29 per cent of the outstandings in 1953-54 to Rs. 14.70 crores or 30.3 per cent of the outstandings at the close of 1954-55.

Credit societies depend largely for their working capital on central financial agencies. Thus, at the end of 1954-55, loans formed nearly 53.5% of their working capital. Owned funds amounted to Rs. 23.96 crore or 38.1% of the working capital, while

the deposits amounted to only Rs. 5.44 crores or 8.6%. Throughout the post-war years there has been a continuous fall in the ratio of deposits to working capital. For instance, the ratio declined from 14.4% in 1946-47 to 8.6% in 1954-55. This shows that, while the short-term credit structure has been taking up in itself an important role in the provision of agricultural credit, it has not been able to attract a proportionately large amount in deposits

The following table gives an idea of the progress of the working and loan transactions of the credit societies :—

WORKING AND LOAN TRANSACTIONS OF CREDIT SOCIETIES				
Particulars	1951-52	1952-53	1953-54	1954-55
Number	107,925	111,628	126,954	143,320
Membership	4,776,819	5,126,002	5,849,380	6,565,416
Loans advanced during the year	(In Crores of Rupees)			
	24.20	25.69	29.64	35.48
Loans repaid during the year	18.97	21.21	26.48	28.61
Loans due at the end of the year	33.66	37.68	41.56	48.53
Loans overdue at the end of the year	8.52	10.47	12.03	14.70
Owned Funds	17.67	19.27	21.55	23.96
Deposits	4.41	4.41	4.61	5.44
Borrowings	23.15	25.49	28.25	33.52
Working Capital	45.22	40.18	54.41	62.93

The following figures show the average membership, share capital and deposits of the agricultural credit societies :—

AVERAGE MEMBERSHIP, SHARE CAPITAL, DEPOSITS AND WORKING CAPITAL OF AGRICULTURAL CREDIT SOCIETIES

Particulars	1952-53	1953-54	1954-55
1. Average membership	46	46	46
	(In Rupees)		
2. Average share capital per society	887	901	926
3. Average share capital per member	19	20	20
4. Average deposits per society	396	363	380
5. Average deposits per member	9	8	8
6. Average working capital per society	4,406	4,286	4,391
7. Average working capital per member	96	93	96

The membership per society is small so that the vast majority of the societies are uneconomic. The average deposits, share capital and working capital per society amounted respectively to Rs. 380 ; Rs. 926 and Rs. 4,391 ; the average deposits, share capital and working capital per member amounted to Rs. 8; Rs. 20; and Rs. 96. These average figures are as the low side.

Defects in the Working of Credit Societies

The agricultural credit societies suffer from a number of defects, the most important of which are :—

1. They are financially weak and not able to benefit the cultivator as they should. The low proportion of owned funds and small deposits are the causes of this financial weakness, *e.g.* the owned funds formed only 22 % of the working capital in 1953-54 as against 42.1 % in 1950-51 ; and the ratio of deposits to working capital has also shown a downward trend from 12.3% in 1948-49 to 10.9% in 1950-51 and to 8.6% in 1954-55.

2. The rates of interest paid by the agriculturists on loans are still very high—from 12% to 24%. Inadequate expansion in the co-operative movement on sound lines, failure of co-operatives to raise sufficient deposits and the small and uneconomic nature of the C. B., B. U. in some States, are some of the factors responsible for high interest rates.

3. Enforcement of repayment of loans is not strictly adhered to. The accumulations of heavy overdues and the freezing of the assets has resulted in clogging their business and paralysed the working over large parts of the country.

Suggestions for the Improvement

In order to improve the conditions of the agricultural credit societies the following recommendations made by the Reserve Bank deserves all careful consideration :—

1. Loans should strictly be limited to cultivation finance. This should ordinarily mean the expense in connection with cultivating operations like ploughing, sowing, weeding, but may also include the sums ordinarily required for the maintenance of the farmer's family till harvest or other urgent purposes like the replacement of proceeds of the harvest in a normal year. To this end he should be prevented from borrowing from more than one source.

2. In order that there may be no overfinancing the normal income from the crop and the normal cost of cultivation should be estimated by the Co-operative Department and the central banks. It should be possible to do so with approximate accuracy with the help of the settlement reports and the Agricultural and

Revenue Departments. This estimate will remain fairly stable from year to year but should be checked and revised, if necessary, with every year's experience.

3. If loans have to be issued which cannot be repaid in one year, *e.g.*, for the replacement of cattle, such loans should not extend beyond two years and provision should be made for their repayment in equal instalments. Such loans should be clearly distinguished from annual loans and should not exceed a comparatively small proportion of the societies' business.

4. All loans must be issued in instalments as money is required for each of the purposes and not in lump sum.

5. If loans are not repaid within the stipulated period, immediate steps should be taken to recover the amount or wind up the society unless there is a crop failure.

6. Extension should be allowed only in cases of crop failure certified by the Agricultural Department and then only if there are reasonable prospects of recovery in the near future.

7. They should build up strong reserve funds by providing for adequate margin between their borrowing and lending rates. This would enable them to tide over unfavourable seasons when their members are prevented from repaying the loans and to meet the losses thus caused.

8. The primary credit society should be reconstructed on sound lines. The existing credit societies in order to be of genuine and lasting benefit to the cultivator should be converted into multipurpose societies and made a centre of activity of the whole village life. They should not merely be an agency for supplying finance but an influence for all-sided development of the life of the villager from every point of view. They must educate the farmer in the use of money for improvement of agriculture so as to put it on a profitable basis. Thus his whole psychology of life must be changed and if this is to be done it is necessary that he should be taken up as a "whole man" and that all aspects of his economic life should be dealt with by the same agency.

2. Non-Credit Societies

While credit is and must remain for some time to come the chief concern of the co-operative movement in India, development in other lines has been steady since 1912, when non-credit societies were brought efficiently under the aegis of the movement. Mr. F. C. Wace rightly remarked in 1919 that "the considerable and steadily growing strength of the non-credit side of the movement, improving as it does the economic position of the peasant, adds greater stability to the credit side, quite apart from its educational and moral influence."

The number of State non-credit societies increased from 42 in 1954 to 60 in 1955 and 82 in 1956. Their business turnover registered an increase from Rs. 5.74 crores during 1953-54 to Rs. 7.66 crores during 1954-55, and to Rs. 7.67 crores in 1955-56. The increase was mainly due to change in the classification of the societies from central to State. Their membership consisted of 7,921 individuals and 7,988 societies in 1954-55.

The Central non-credit societies numbered 2,599 on the 30th June, 1955, and had a membership of 18,11,782 of which 17,43,072 were individuals and 68,710 societies. They sold goods worth Rs. 50.45 crores during 1954-55 as compared with total sales amounting to Rs. 36.51 crores in 1953-54.

The number of primary agricultural non-credit societies stood at 30,197 at the end of 1954-55. They accounted for a membership of 24,94,508 and a working capital of Rs. 20.72 crores. Their sales declined from Rs. 33.74 crores in 1953-54 to Rs. 27.04 crores in 1954-55.

Land Mortgage Banks¹

Land Mortgage Banks also supply long-term credit to the cultivators, specially for discharge of prior debts and redemption of mortgages, and not for purposes connected with land improvement and development.² By 1954-55, there were 9 Central L. M. B. and 292 Primary L. M. B. in India, which advanced Rs. 2.43 crores and Rs. 1.45 crores during this period.

State	AMT. LENT FOR THIS PURPOSE AS % OF THE TOTAL AMT. LENT			
	Re-payment of old debts	Improvement of Land	Purchase of Land	Two or more of the preceding purposes
Mysore ...	100	...	...	...
Madras ...	95	1	...	4
M. P. ...	59	14	3	24
Bombay ...	49	20	18	13

Defects in the Working of the L. M. Banks

(i) L. M. B. have little or no specialised staff for assessing the technical soundness of schemes and inadequate supervising staff for verifying that schemes are in fact being executed. State Governments possess such a machinery, lent proper co-ordination between the State Governments and L. M. B. in this particular is almost lacking.

¹ For fuller details see Chapter 20, in *Long-term Agricultural Credit*.

² *Rural Credit Survey Report*, Vol. II, p. 221.

(ii) Borrowers from L. M. B. are required to repay loans in equated annual instalments usually 15 or 12. Different periods are not prescribed for different types of loan.

(iii) There is much delay in sanctioning the loans.

(iv) They charge high rates of interest on the loans granted by them. They range from 3—5½% in Andhra to 4½—5% in M. P. and from 5½ to 6½% in Mysore.

(v) L. M. B. find it difficult to raise adequate long-term funds for their operations. Even though guaranteed by the State Governments, their debentures have only a limited market.

(vi) Central L. M. B. and State Co-operative Banks not only remain legally, financially and administratively distinct, but make little effort to co-ordinate their activities.

The 23rd Conference of Co-operative L. M. Banks in Madras in 1953, suggested a number of improvements in the working of land mortgage banks in India. The most important of them were :—

(1) The available funds should be increasingly utilised in a manner calculated to increase agricultural production and to help create the very savings out of which old debts may be discharged.

(2) The present lending system in which second and third loans are issued to the borrowers for unproductive purposes, without any limit on the amount is defective. Hence, it should be rationalised (a) by charging higher rates of interest on these loans, (b) by giving loans for smaller loans so that the increased income from land may be prevented from being diverted to purposes other than redemption of loans, and (c) by paying due attention to the purpose of loans.

(3) In order to solve the difficulties of delay in the sanctioning of loans, it was suggested that the Central L. M. B. should publish pamphlets indicating in simple words the procedure and requirements to be satisfied by the cultivators in obtaining loans.

4. Properly trained staff should be appointed in the banks with approved agents in rural areas for giving information about the loans.

(B) Non-Agricultural Societies

Credit Societies

These include among others, Salary Earners' Societies, Mill Workers' Societies and urban banks. In 1954-55, India had 9,348 primary non-agricultural credit societies as against 8,389 in 1953-54. Their membership and working capital increased from 27,38,466 and Rs. 69·89 crores in 1953-54 to 28,47,944 and Rs. 78·32 crores in

1954-55. Deposits represented 62·4% of the working capital ; which show that these societies have been able to attract a larger amount of deposits than the agricultural credit societies. These societies advanced loans to the tune of Rs. 62·12 crores and the outstanding amounted to Rs. 54·98 crores of which 10·2% were overdue.

Non-Credit Societies

There were 24,266 non-agricultural non-credit societies with a membership and a working capital of 31,50,377 and Rs. 52·55 crores respectively at the end of 1954-55, as against 21,137 societies with a membership of 31,71,099 and a working capital of Rs. 50·04 crores in 1953-54. Their sales recorded a significant decrease from Rs. 45·00 crores to Rs. 31·65 crores. This was due to relaxation of controls and abolition of procurement.

The net results of the operations of different types of co-operatives societies during 1954-55 are shown in the following table :—

	1951-52	1952-53	1953-54
State and Central Banks	70·62	69·67	78·78
State and central non-credit societies	119·94	38·18	(—2·39)
Agricultural credit societies	87·72	62·02	73·75
Agricultural non-credit societies	65·36	7·72	(—20·21)
Non-agricultural credit societies	104·04	108·65	120·59
Non-agricultural non-credit societies	242·57	(—98·48)	(—106·93)
Land mortgage banks and societies	7·00	9·00	9·11
Total	697·29	215·90	167·79

Review of the Co-operative Movement in India

According to the Reserve Bank of India, “the co-operative movement is not evenly spread, nor is it of same texture and quality everywhere. While the movement has made considerable progress in some Part A States, it is inadequately developed in others and practically underdeveloped in some Part B and Part C States. Indeed, out of a total of 1,26,954 primary agricultural credit societies in India in 1953-54, Bombay, Madras and U. P. alone accounted for 53,167 or nearly 42% of the total, and nearly 55% of the membership of primary societies ; while the six States of U. P. Madras, Bombay, West Bengal and Punjab and Hyderabad account for 66% and 75% respectively.” Thus we see that co-operation is better developed in some parts of the country. “It is not surprising, therefore, that the mobilization of local resources or banking and credit services rendered by the co-operative sector should have been extremely uneven as between the different parts.”

But the number of societies cannot be a proper criterion for judging the progress of co-operative societies in a country where there are wide divergencies of area and population. We should also know the percentage of population that is being served by these societies. If we do so, a slightly different picture emerges. The five States, as given in the following table, where the number of societies per 1 lakh of inhabitants are the highest are Punjab, M. B., Ajmer, Coorg and Himachal Pradesh, and the five States where the number of members of primary societies per 1,000 inhabitants are the highest are Bombay, Madras, Coorg, Mysore and Hyderabad. This shows that the co operative movement has developed to a considerable extent in some of the Part B, C and D States.

Co-operative Societies, Members and Working Capital, State-wise (1953-54)

State	Popula- tion (lakhs)	Total number of societies	Number of societies per one lakh inhabitants	Total num- ber of members of primary societies	Number of members of primary societies per 1000, inhabi- tants	Working Capital (Rs)	
						Total	Number of annas per head of population
Part, A States							
Andhra	214.5	11,036	51.45	13,59,790	63.4	36,56,59,592	272.8
Assam	95.9	2,647	27.60	3,46,814	36.2	2,51,51,538	42.0
Bihar	415.3	18,564	44.70	7,89,749	19.0	7,48,63,332	28.8
Bombay	385.3	18,036	46.81	26,87,121	69.7	1,09,25,36,643	453.7
Madhya Pradesh	218.1	11,414	52.33	5,20,160	23.8	15,32,65,705	112.4
Madras	373.7	14,885	39.83	25,94,278	69.4	62,00,12,489	265.5
Orissa	149.4	6,544	43.80	3,50,811	23.5	6,24,16,877	66.8
Punjab	127.3	14,119	110.91	6,99,382	54.9	16,71,62,242	210.1
Uttar Pradesh	656.0	41,319	62.99	17,30,984	26.4	31,79,44,830	77.5
West Bengal	258.8	16,005	61.84	10,12,897	39.1	20,12,62,981	124.4
Total							
Part A States	2894.3	1,54,569	53.40	1,20,91,986	41.8	3,08,02,76,229	170.3

Part B, C and D States:	195-0	13,205	67-72	11,28,511	57-9	11,95,50,323	98-1
Hyderabad							
Jammu and Kashmir	44-6	3,148	70-58	1,91,046	42-8	1,19,90,715	43-0
Madhya Bharat	82-2	7,715	93-86	2,09,830	25-5	5,49,24,856	106-9
Mysore	97-3	5,675	58-32	6,55,364	67-4	8,86,90,856	145-8
Pepsu	35-2	2,293	65-14	62,827	17-8	1,72,37,859	78-4
Rajasthan	160-0	39,39	24-62	1,39,540	8-7	2,97,64,505	29-8
Saurashtra	43-6	1,217	27-91	58,042	13-3	3,47,27,153	127-4
Travancore-Cochin	99-5	2,689	27-03	3,96,917	39-9	3,25,31,289	52-3
Ajmer	07-3	930	127-40	34,523	47-3	80,57,403	176-6
Bhopal	08-7	242	27-82	7,933	9-1	12,35,276	22-7
Coorg	02-5	379	151-60	56,835	227-4	76,06,528	486-8
Delhi	21-1	1,173	55-59	73,714	34-9	2,35,38,070	178-5
Himachal Pradesh	09-9	671	67-78	35,293	35-6	54,76,756	88-5
Kutch	05-9	38	6-44	2,707	4-6	4,86,939	13-2
Manipur	06-0	329	54-83	13,805	31-3	6,20,506	16-5
Tripura	06-9	37	5-36	4,084	5-9	3,23,404	7-5
Vindhya Pradesh	38-4	332	9-12	9,777	2-7	6,76,540	3-0
Andaman and Nicobars	00-3	17	56-67	1,899	63-3	1,64,827	87-9
Total	862-4	44,029	51-05	30,87,645	35-8	43,76,03,805	81-2
Part B and C States							
Grand Total	3756-7	1,98,598	52-87	1,51,79,633	40-4	3,51,78,80,034	149-8

Before we conclude this history of the co-operative movement in India we may point out its certain characteristic features :—

Firstly, the co-operative movement in India has not sprung up from amongst the people. It was initiated by the Government with a view to solve the problem of rural indebtedness ; and even today it is based not on the voluntary efforts of the people determined to help themselves but on the Government support, which could not evoke the ready response and services of the young and the ardent, who looked with suspicion upon every movement so started. In the words of Mr. V. L. Mehta : "Government are so out of touch with public feeling and sentiment that despite their control of the machinery of administration they fail in their effort to seek an expansion of the movement." In fact, it is not a spontaneous growth but a Government policy.¹ The distinction between co-operation imposed by the Government and necessarily supervised, regulated, restricted and controlled on the one hand, and co-operation promoted by voluntary initiative and sustained by the co-operative spirit, which ensures the loyalty of the members, on the other hand, cannot be over-emphasised.²

Secondly, started originally to provide the farmer with cheap credit, it has continued to this day a predominantly credit movement. So that the progress of non-credit co-operation has been slow and agricultural credit societies dominate the picture. Agricultural credit societies constituted 78·8% of the total number of agricultural societies on June 30, 1955.

Thirdly, though there are inter-provincial differences, the structure of the co-operative organisation is uniform in almost all the States, e.g., in each State at the head of the movement there are three authorities, viz., the Registrar of the Co-operative Societies in charge of control and direction of the movement, State or Apex Bank in charge of finance, and the State Co-operative Institute or Union in charge of education and propaganda.

Apart from the general expansion, the working of the movement in recent years has been characterised by greater diversity of functions ; co-operation has permeated several walks of life, some of which were perhaps no more than touched before. It has played an important part in the attempts to solve two big problems, viz., the rehabilitation of displaced persons and the augmentation of the food production. The rehabilitation of displaced persons through the formation of co-operatives received a great fillip, owing mainly to the aid extended by the Government,

1 Horace Plunket Foundation, *Year Book of Agricultural Co-operation* (1930), p. 20.

2 *Ibid.*, (1931), p. 24.

in the shape of loans, grants-in-aid, cheap land building materials and similar other concessions. Housing, industrial and farming societies were generally encouraged so that the displaced persons could be settled in colonies and provided with gainful occupations. In the field of food production co-operatives were entrusted with the distribution of manures, chemical fertilisers and agricultural implements. Credit facilities were liberalised for the members of co-operative credit societies by such measures as the relaxation of credit limits, financing at concessional rates installations of pumping sets and oil engines. Thus by the introduction of modern methods there was sought to be brought about both more intensive and extensive cultivation of land.

The full-scale development of the multipurpose idea in several States like Madras, Bombay, Mysore, U. P., is another notable trend in the primary credit structure. These societies were entrusted with the distribution of rationed and other essential commodities.

Co-operatives under the Second Plan

The Rural Credit Survey Committee recommended that the large-sized societies serving the groups of villages should be formed by amalgamation of the existing small societies. According to this Committee the general pattern of organisation for a larger co-operative society is that it should have a membership of about 500, the liability of each member being limited to five times the face value of the capital subscribed by him. The society would have a minimum share capital of Rs. 15,000 and would serve an approximate number of villages, grouped together. By 1960-61, under the Plan, 10,400 large sized societies, 1800 primary marketing societies, 35 co-operative sugar factories, 48 co-operative cotton gins, and 118 other co-operative processing societies are to be established. The Plan also envisages the construction of 350 warehouses by the Central and State Warehousing Corporations, 1,500 godowns for marketing societies and 4,000 godowns for large-primary agricultural societies.

CHAPTER 19

EVALUATION AND REORGANISATION OF THE CO-OPERATIVE MOVEMENT

Over fifty years have passed since the co-operative movement was first officially inaugurated in India. There has been a steady increase in the number of societies, their membership and their total working capital. At the end of 1955-56, there were 240,395 co-operative societies of all types, with a membership of 16·52 million and aggregate working capital of Rs. 468·82 crores as against 1,93,000 societies with a membership of 0·16 million and a working capital of Rs. 0·68 crores in 1906-10. Taking the average size of an Indian family as 5 members, roughly 80·1 million or 21 per cent of the population has been brought into the co-operative movement. The structure of the co-operative organisation has also been progressively perfected with higher agencies for finance, supervision, administration and propaganda. But what has it achieved? Has co-operation in India like that in Denmark and Ireland, galvanised the economic regeneration of our peasantry? These are pertinent questions. It is not putting it too strongly to say that co-operation has been on trial for its life in some sections; and there have been times when the movement has been virtually dead on its feet. A critical evaluation is, therefore, necessary of the present status of the movement.

Co-operation is not a panacea which it was one somewhat unrealistically hoped to serve. Prof. H. L. Kaji so rightly remarked in September, 1948 at Prague that "the work so far done is not in any way adequate to the immensity of the problem. Nothing short of widespread state machinery will reconstruct the village and the villagers. It is only when this objective has been achieved, to at least an appreciable extent that voluntary efforts by the people themselves can make further headway with adequate grants and subventions from local boards and the Government." It must be admitted that though co-operative movement in India has not indeed succeeded in curing all the economic and social evils under which the peasantry is working yet it has, no doubt, led to some beneficial results.

BENEFICIAL RESULTS

1. Lower Rates of Interest

One obvious result of the co-operative societies is that the competition which ensues between them and the local moneylenders

brings down the current rates of interest in the locality. Co-operative societies have thus benefited not only their members—agricultural and artisan classes—but also non-members who borrow from the moneylenders, and as pointed out by Sir Darling, “Even where the moneylender’s financial hold is unshaken, his psychological influence is weakening.”¹ According to Sir Edward Maclagan the members saved Rs. 10 lakhs by way of interest on every one crore of rupees lent by the primary societies and the total saving effected to the farmers in this way had been calculated at Rs. 3 crores. Thus in several places co-operation has successfully undermined the predominant position of the moneylender and compelled him to bring down his rates of interest. In the matter of debt redemption also, something has nevertheless been achieved, especially by the establishment of Land Mortgage Banks on co-operative lines. In the words of Sir Darling, “The co-operative movement may be regarded as a new form of communal life to protect the peasant from within and without his gates, in place of the old communal life of a village which prevented the cultivator from being exploited.”² The magic of co-operation lies, therefore, in the fact that it substitutes for the moneylender’s demoralising system an organisation under which credit is controlled and borrowing restricted.

2. Spread of Banking Habit

With the progress of co-operation, the banking habit is slowly but steadily developing in rural and urban areas and the hoards that were lying unused are gradually coming into fruitful employment in various productive channels.

3. Benefits to Agriculture

Co-operation has also benefited agriculture. It has facilitated the work of the Agriculture Department in popularizing improved seeds and cattle, cheap manures and implements and, in general, helping the realization of the ideal of ‘better farming, better business and better living.’ The gradual development of a truly organic connection between co-operation and agriculture is pregnant with great possibilities.

Co-operative societies have in some cases attempted successfully to deal with the problem of rural sanitation and provision of medical facilities in the rural areas. According to Sir Darling the societies in the Punjab have insisted on manure being pitted, on their members not keeping their cattle in their houses and on societies encouraging vaccination. Some societies also make liberal contributions towards various charitable and public purposes.

1 M. L. Darling, *Rustic Loquitor*.

2 M. L. Darling, *Punjab Peasants in Prosperity and Debt*, p. 261.

Of the two aspects of the movement, rural and urban, the latter has a much more satisfactory record alike in respect of the magnitude of its operations absolutely as well as relatively to the population, the efficiency of its management and the quality of service rendered to its constituents.¹ Societies started for non-agricultural purposes, though as yet on small scale, are also doing useful work in their respective fields. The conditions of factory labourers, depressed classes and employees of all sorts, is being gradually ameliorated under the benign influence of co-operation. The good work done by the cotton sale societies in Bombay, the irrigation and milk societies in Bengal, the co-operative seed societies and milk societies in M. P., consolidation of holdings societies in the Punjab, sugarcane and ghee supply societies in U. P. and Bihar, gur and vegetables and fruits societies in Bombay, encourages one to hope that given the necessary organising staff, co-operation will play in future as great a part in assuring the cultivator of the full return of his labour as it has in providing him with cheap capital.

4. Training in Business Methods

The co-operative societies have also conferred the benefit of the provision of a valuable training in business methods. In good working societies the members take an active part in the working of the society, keep a watchful eye on the way in which members utilise the loans and pass the accounts presented by the panchayats. Thus the ordinary members get a training in the use of money and its control and the members of the board of management get training in keeping the accounts. In fact, the primary societies can be regarded as a network of elementary schools in rural finance.² The movement has in some cases created a desire for education and even persons fairly advanced in age have been found to seek its benefit.

5. Moral and Social Benefit

But the economic results of co-operation are far less important than general effect on rural life. Co-operation constitutes an admirable means of popular social improvement. It has checked the petty quarrels and bitternesses of village life, bound together men into friendly relationship and trained the people to work in comfort for a common end.³ The reduction in friction, reflected in general decrease among members of the co-operative societies in litigation, is generally credited to the influence of co-operation.⁴ Litigation

1 *Review of the Co-operative Movement in India*, (1939-40), p. 80.

2 M. L. Darling, *Op. Cit.*, p. 250.

3 R. K. Mukerjee, *Foundations of Indian Economics*, p. 430.

4 Hough, *Co-operative Movement in India*, p. 319.

and extravagance, drunkenness and gambling are all at a discount in a good co-operative society and in their place is found industry, self-reliance and straight dealing, education and arbitration societies, thrift, self-help and mutual help.¹

Mr. H. Wolff has very ably summed up the effects of co-operation in these words, "As an effect of co-operation, the idle man becomes industrious. the spendthrift thrifty, the drunkard reforms his ways and becomes sober, the haunter of taverns forsakes the inn, the illiterate, though a grandfather, learns to read and write. It sounds like a tale from wonderland, yet it is all sober fact."²

Thus, co-operation has helped to relieve poverty by reducing members' indebtedness, lowering the interest rates, consolidating holdings, increasing productiveness and thrift and lowering the cost of necessities to members, providing for the disposal of their products and discouraging unnecessary social expenditure. It has done something to raise the standard of living; it has made at least a beginning in reducing the appalling amount of illiteracy; and it has increased the country's banking facilities. In all these directions co-operation has made more or less progress, although so far it has affected only the fringe of the situation for the country as a whole.

Weakness of the Movement

It must, however, be recognised that all these benefits—moral, educational as well as purely economic—have been secured only on a very small scale. Much yet remains to be attempted and achieved in the field of non-agricultural co-operation. Co-operation in India has not been a living, dynamic force contributing to the moral, intellectual and economic regeneration, bringing new life and hope to the farmers. It has not become with them as with the farmers in Denmark, 'a way of life' but has remained a Government agency from which they can obtain cheap credit. The very slow progress of co-operative societies for purposes other than credit, e.g., societies for the joint cultivation of holdings, for the consolidation of holdings, for the purchase of supplies, and for the sale of products, proves that the real message of co-operation, viz., that of "self-help and mutual association for common economic benefits" has not been grasped by the ryots in India. This fact explains why even after 53 years of co-operation the movement is not spreading by its own momentum. Co-operative societies have failed to conform to the ideals of co-operation and have degenerated into mere agencies for the provision of cheap credit.

1. M. L. Darling, *Op. Cit.*, p. 250.

2. H. Wolff, *The People's Bank*.

They have failed appreciably to raise the standard of life in the villages of India ; and as Sir M. Visvesvaraya remarks, "All that has been done amounts only to a scratching of the surface."¹ Thus it will be noticed that co-operation in India has not been the miracle its original sponsors hoped for ; but it has taken its place among the constructive forces working for the economic regeneration of India and the establishment of a sound national economy.

Several causes have been responsible for the weakness of the movement in India. The most important of them are discussed below :

1. Lack of Spontaneity

This has been one of the greatest inherent weaknesses of the Indian co-operative movement. The urge of co-operation has come from the top and not from the people themselves. While in countries like Germany, Ireland and Italy, co-operative societies were started and organised by co-operative enthusiasts like Raiffeisen, Horace Plunkett and Luzzati, in India on the other hand the movement was started by the Government as a remedy to solve the problem of rural indebtedness, and the organisation of the movement was entrusted to official Registrars. It is still true that what has been established has been by the Government initiative, kept in order by the Government audit, and really financed by the Government credit because funds came from the public, who as a rule, would not trust their money to the banks unless they knew that the Government was behind them. The registration of the society, the supervision of its working and its subsequent winding up (if it does not work well) are all statutory functions of the Registrar, who has been rightly remarked as the "*Brahma, Vishnu and Shiva of the co-operative society*." The movement in India has been stigmatized by the late Sir Horace Plunkett as, "with the exception of a few genuinely co-operative cases, due to the zeal of a Registrar or some philanthropic individual . . . not so much a movement as a governmental policy." He emphasized that the greatest obstacle to the self-reliance was the "habit of looking to the Government to do for us things which we can and ought to do better for ourselves."²

Co-operation if it is to be real must spring from the people and should insist on self-help. The Central Banking Enquiry Committee says in this respect that "in order to popularize the co-operative movement in the country and to promote a sense of responsibility among the members of the society, it is important that the official control that now exists should be slackened." As

1 M. Visvesvaraya, *Planned Economy for India*, p. 185.

2 H. Plunkett, *Co-operation as a Factor in the Development of Rural India*, p. 25.

said above, the Registrar of the co-operative societies is almost all-powerful, and as the fundamental basis of co-operation is self-help, his powers should be severely curtailed, and that there should be a progressive realisation of the official control. Then according to Prof. Kaji, "The popular movement should be handed back to the people . . . the continuance of the State control at every turn is detrimental to the highest interests of the movement."¹ It may be pointed out that though the time has not come for the deofficialization of the movement, yet a beginning can be made by handing over some of the functions, such as co-operative education, audit, and supervision of the co-operative societies, to the Provincial Co-operative Institutes or Unions ; and for some time to come the ultimate control of the movement must still remain in the hands of the Government. The co-operative movement in India will be self-regulating only when the members of the primary societies are imbued with a co-operative spirit and all well equipped to protect their own interest. But as things stand at present, majority of the members are either ignorant or indifferent and the non-official co-operators with a real incentive for honorary work are few. Hence, a complete devolution of powers to non official bodies at this stage will mean only the handing over of control to a few individuals who claim a monopoly of all co-operative knowledge. Hence, what is needed is that the Government should retain a more thorough supervision and control and educate the members in the principles and methods of co-operation so that ultimately the powers may be handed over to the people.

2. Illiteracy and Ignorance of the Members

The level of education necessary to understand the basic principles of co-operation are entirely lacking in India. The masses in India are appallingly ignorant of the very fundamentals of co-operation. There have been great difficulties in finding out literate villagers to serve as secretaries for co-operative societies, many villages in the interior being without a single village literate man. But even if a suitable secretary can be found, the illiteracy of the rank and file of the members makes it difficult to educate them in co-operative principles and limits their effective participation in the conduct of the society, without which it cannot be a truly co-operative undertaking or avoid the danger of exploitation by a few influential members. According to Sri V. L. Mehta, "A great democratic movement like that of co-operation can have no firm foundation unless it is based on the ordered will of the people, and I doubt very much whether the desire to organise for common economic endeavour will prove effective in the absence of an educated proletariat."

1 H. L. Kaji, *Co-operation in Bombay*, p. 16.

There has been a tendency to measure the success of the co-operative department by the number of societies it started rather than any benefit which it might have conferred on the people. But as Lord Linlithgow remarked, "Mere members are not a measure of success in co-operation. Quality is the test, and quality is to be measured as much by the extent to which membership improves the general outlook of the individual members, as by any betterment that it may effect in his economic condition."¹ Neglect of education in co-operative principles and practice, for departmental officials and honorary workers as well as for office-bearers, staff and members of the co-operative societies, has exacted a heavy toll. The Travancore Committee found the absence of fundamentals of co-operation not only among members but also in large proportion of the office-bearers of the societies, "probably the main reason for the present decadent condition of the movement."² Sir Darling has expressed that, "the difficulty of getting the simplest rules and principles into the heads of the illiterate peasants can hardly be exaggerated."³ Similarly the Bengal Registrar believes the lack of training and of the understanding of the co-operative principles is responsible for the chief defects of the members. In this connection the Royal Commission on Agriculture so pertinently remarked, "While societies have been registered freely, there has been a lack of patient and persistent education of the members in the principles and meaning of co-operation by teachers competent to perform their task efficiently under adequate supervision."⁴ All that the rural societies mean to the cultivators is that it is a bank, somehow or other connected with the Government, from which they can get the money at a cheaper rate than from the moneylender or mahajan, that there is no particular hurry in repayment and that it does not matter much if they utilise the loan for some purpose other than that for which they professedly took it; that there is no reason why they should work harder, be more thrifty or spend their money more carefully than they did before they became the members.⁵

This leads us to the fact that without education and enlightenment the cultivators cannot grasp the very fundamentals of co-operation. The need for co-operative education and training for all grades of workers, official as well as non-official, engaged in the movement can hardly be over-exaggerated but very little attention has yet been paid in India to the systematic organisation of co-operative education. As the Madras Committee on Co-operation in 1940, have pointed out, "To ensure efficiency in the service, paid

1 Plunkett, *Op. Cit.*, p. 22.

2 *Report of Travancore Co-operative Enquiry Committee*, p. 162.

3 *Report on Co-operative Societies in Punjab*, (1945-46), p. 3-4.

4 *Abridged Report of the Royal Commission on Agriculture*, p. 51.

5 *Report of the Assam Banking Enquiry Committee*, Vol. I, p. 133.

staff in the movement should be adequately trained for their jobs and the members and the office-bearers should be taught the theory and practice of co-operation. This should be a normal feature, and not a periodical activity." The Central Banking Enquiry Committee also felt that the Co-operative Colleges should be established and conducted by co-operators and that the Government should give them financial help through liberal grants. For some time past various Universities have introduced higher courses in co-operation in their curriculums. Dr. R. K. Mukherjee had so boldly emphasised, "Above all, there is a need of comprehensive policy of education, for without a wide diffusion of knowledge of education among the villagers, neither the modification of rights in the land nor the introduction of the economically profitable cultivation units; neither the facilities given by the co-operative credit nor the aids given by the improved agricultural implements and methods, can bring about a lasting improvement of social and agricultural conditions of the country."¹ In the absence of this stimulus, the co-operative movement may keep alive as an exotic plant, but will never thrive.²

3. Inefficient Management

The management of the societies is very inefficient. The emphasis on thrift, on productive borrowing and punctual repayment is hardly found in practice. Very small portion of the working capital comes from the deposits from the members; the major portion of the deposits being supplied by the Co-operative Central Banks. As such many village credit societies are mere groups of borrowers. The fact that the major portion of the funds is derived from the outside sources makes the members of the society indifferent with regard to the recovery of loans. The loans are granted recklessly and extensions given without reason. Managing Committees and the Presidents too often are allowed to usurp all power and office-holders and the leaders of the movement often display an undue delicacy and lack of moral courage in dealing with the faults and misdemeanours of the members. Very often the members of the Board of Management are themselves defaulters and no prompt action is taken to recover the loans. "Members of the societies delay payment even when they are able to pay; understanding of the principles of co-operation and knowledge of essentials of rural credit are lacking; office-holders refrain from taking steps against defaulters, and the spirit of self-help is not as prominent as it should be, if the movement is to be a live force in the village. Even where defects are obvious and admitted, there is reluctance, as dangerous as it is regrettable,

¹ R. K. Mukerjee, *Rural Economy of India*.

² Wadia and Joshi, *Wealth of India*.

to liquidate societies whose condition is beyond remedy.”¹ This condition leads to excessive overdues. The funds of the society are thus frozen, and the honest members, who have repaid their previous loans immediately, when they want new loans have to go to the moneylenders and this further weakens the financial position of the societies. “Overdue loans have become a serious problem in almost all the State and unless loans are repaid punctually, co-operation is both financially and educationally an illusion.”

To remove these serious defects, a co-operative credit society should aim at financing all the short-term needs of its members. Loans for current agricultural needs and for consumption should be strictly repayable at the end of the agricultural season each year. Loans for immediate periods for productive purposes and for certain non-productive purposes might be advanced by a society to the extent of its own resources in share capital and reserves. The period of such finance should ordinarily be three years which might in exceptional cases be extended up to five years by a society in a strong position. For the smooth working of the co-operative system it is necessary that repayments should be regular. If co-operative finance is properly planned defaults so common at present would be greatly minimised. In no case should wilful defaulters be tolerated and there should be no hesitation in resorting to coercive measures if the need arises. Extensions might be allowed as at present to enable members to tide over the temporary difficulties.

4. Inadequacy of Finance and Delay in Granting Loans

Inadequacy of finance available to the members is an important weakness of the movement. It is frequent that loans are not granted as and when they are required by each member. It is very common that a month or six weeks elapse between a loan application and the receipt of money by the members. Very often the loans are disbursed to all the members on one day once or twice during the year. This makes co-operative finance highly inelastic and artificial. In such cases the members have usually to resort to moneylenders for their normal finance, and the loan advanced by the co-operative society being utilised to make payment to the moneylender. This leads to a division of the members' loyalties and weakens the financial position of the society. Inadequacy of finance arises from various factors : (1) want of properly forecasting the requirements of the cultivators of unexpected contingencies happening after the forecast ; (2) demands for fresh loans when the previous loan has remained in arrears by reason of

¹ *Report of the Royal Commission on Agriculture*, p. 499.

unforeseen disaster like scarcity, adversity, floods or pestilence and pests ; (3) requirements of certain members, such as large holders, being above the by-law limit, are not met and (4) loans for domestic ceremonials.

It need hardly be mentioned that co-operative finance, to be useful should be so planned as to be available to each and every member as and when he actually requires it. For this purpose it is necessary that *firstly*, the borrowing power and limit of each member and for each society should be fixed each year so that no detailed enquiries are ordinarily necessary at the time of advancing loans. A member should be able to borrow from his society, and the latter from its financing institution within the limits sanctioned whenever they require finance during the year. *Secondly*, societies with sound management should be allowed cash credit arrangements with their financing institutions so that at least a part of the finance required by the members of certain standing can be made available most immediately. *Thirdly*, societies of good standing might be permitted to keep some cash in hand which can be utilised in making small loans without approaching the financing agency. *Lastly*, the system of running credits to individuals should be introduced wherever practicable and responsible officers of the societies should be permitted to sanction loans not in excess of specified amounts in an emergency.

5. It has failed to serve the neediest strata

The failure of the co-operative movement to serve the neediest strata is a general weakness. It may be pointed out that the vast majority of the peasantry do not possess even the means required to become members of the co-operative societies. "At one end of the scale, there are people who are so well off that they do not desire to incur the risk of unlimited liability by enlisting themselves as members. At the other end, there are persons who are so poor that the co-operative population represents the medium agricultural population."¹ Another difficulty is that credit societies are of no use in the poorest districts, where the cultivators are most in need of aid. It is worse than useless to give loans to cultivators who are permanently incapable, owing to fragmentation, climatic or other difficulties, of making their holding stay. Thus it is chiefly in the most prosperous areas that credit societies are successful.²

In spite of the fairly large increase in the number of societies in many of the States, the percentage of villages covered by them still fell short of the target of 50% suggested in the Report of the

1 *Bengal Provincial Enquiry Committee Report*, p. 69.

2 V. Anstey, *Economic Development of India*, p. 203.

Co-operative Planning Committee. Only in the States of Bombay, Punjab, Delhi, Coorg and Ajmer were more than half the member of villages covered by the agricultural credit societies. The per cent of the villages covered was 69·0 ; 55·2 ; 80·2 ; 72·0 and 61·8 ; while in Madras it was only 49·2 ; in Andhra 43·2 ; in West Bengal only 35·0 ; in U. P. 34·3 ; in M. P. 33·0 and in M. B. only 31·6%.¹

6. Co-operative Credit has not been the Controlled Credit

Almost all the members of a society join it merely to get the money from it, and few really understand the need for restricting credit for the productive purposes. It may be pointed out here that the efficiency of the co-operative finance would be considerably increased if a co-operative society has control over the produce of the members on the one hand, and on the other, can ensure the proper application of the loans advanced by it. The operations of the credit society should be closely linked to those of the sale societies. This has been attempted in Madras under what is popularly known as the scheme of 'Controlled Credit.' According to the Madras Committee on Co-operation, "The essence of this scheme is that loan sanctioned should be dispersed to members in instalments as the need for the purpose for which the loan is taken arises and the loan given should be recovered out of the income obtained by the application of the loan, *i.e.*, if a loan for cultivation expenses is a sanctioned, it should be disbursed in instalments as the cultivation operations progress and the loan should be collected from the sale proceeds of the crop raised. For this purpose the member is asked to execute an agreement to sell the produce either through the society or the sale society to which the village co-operative society is affiliated. The dues of the members of the village co-operative or a land bank are deducted by the sale society from the sale proceeds of the produce and the balance is remitted to the member. Through a co-ordination of the work of agricultural credit societies, central banks, sale societies and land mortgage banks, credit is linked up with marketing and every stage of sale of produce is supervised and controlled." A village credit society should finance its members on the conditions that the produce is disposed of through a sale society to which it is affiliated. Thus the clearance of loans due by the members to societies, and by the latter to central financing agencies should be arranged through the sale societies out of the sale proceeds.

The proper application of loans by the members can be ensured partly by supplying agricultural and household requirements of the members in kind and partly by strict supervision over the operation of the societies. The co-operative societies might

¹ *Review of the Co-operative Movement in India, 1952-54* (1956), p. 8.

establish direct relations with purchasing unions and consumers stores which would supply the goods to the members by debit to societies' account. In absence of such organisations, these requirements might be supplied as far as possible by the society itself. In doing this, the society should work on the indent system and should not undertake any trading risk. Thus the credit societies should work in co-ordination with the sale societies, on the one hand, and with other consumers' stores on the other.

7. High Rates of Interest

The rates at which the members of the primary societies obtain finance are still too high to make its use profitable. The rates vary from State to State, *e.g.*, in U. P. it is 9 to 12% ; in Assam 9½ to 12½% ; in H. P. 9 to 12½% ; in Ajmer 10%. But efforts have now been made in reducing the lending rates to the ultimate borrower. In W. Bengal it has been reduced from 12½ to 7½% ; in Hyderabad from 9½ to 7½% ; in V. P. from 12 to 19 to 9 to 12% ; in Madras and Andhra it is 6 to 8% and in Travancore-Cochin 6 to 8% and in Bombay 7½%.¹ From this it will be observed that the most common rate in 1942-43 is still above 9 per cent. Agricultural industry even under the best conditions would find it difficult to bear such rates of interest. Hence, every effort should be made to produce the rate to the ultimate borrower as much as possible so as not to exceed 6½ per cent in any case. The Government should subsidise the cost of administration of such societies to enable them to bring down this rate of interest. An increasing use should be made of the schemes formulated by the Reserve Bank of India to grant accommodation to the provincial co-operative banks at a concession rate of 1 per cent below Bank Rate for financing seasonal agricultural operations and marketing of crops on the conditions that the benefit of the low rate is passed on to the ultimate borrower.

8. Excessive Preponderance of Credit Societies

Another weakness of the movement has been the almost exclusive emphasis for so long on credit, though the pendulum is swinging now in the other directions too, *e.g.*, though agricultural credit societies continue to constitute the largest number of societies (159 thousand out of a total of 240 thousand of credit societies) in 1955-56, and their percentage to total was 69·3, yet non-agricultural credit societies numbered only 9·3 thousands and the percentage being 4·3 only. In the words of the late Shri Ramdass Pantulu, "Our failure to realise our expectations that co-operation would prove a panacea for the rural masses, would free the

¹ *Review of the Co-operative Movement in India, 1952-54 (1956)*, pp. 12-14.

peasants from the thralldom of moneylenders and would lead to the fructification of the agricultural profits into the pocket of the cultivators is due not to the unsuitability of the co-operative credit for such a purpose, but to our neglect to link up co-operative credit with programmes, which will increase the agriculturist's earning and purchasing power so as to enable him to save and to borrow." Hence, an all-round co-operative activity to resuscitate the stagnant villages is the crying need of the hour.

Reorganisation of the Co-operation Movement

Co-operation in India has not achieved much, partly because it has not attempted to tackle and solve the problem of rural poverty 'as a whole.' Poverty and malnutrition, the widespread indebtedness, the depressingly high percentage of illiteracy and the lack of business experience, uneconomic holdings and the antiquated methods, inadequate transportation and storage facilities, the lack of uniform standards of weights, measures and products, great price fluctuations, and dearth of regulated markets, exploitation by the moneylenders and the middlemen, these are among the facts of a problem that call for simultaneous attention, supplemented by farseeing economic and social legislation. Valiant attempts are being made in these directions, but much remains to be done in them all. The urgent need of the hour is to provide necessary cheap credit at reasonable rates and to improve the economic conditions of the farmers. The former involves consolidation of holdings, improvement of his land, by irrigation or otherwise, the amending of his methods of cultivation, encouraging the pursuit of one or more supplementary occupations enabling more profitable disposal of his products. The reduction of expenditure involves sound systems of land holding, and land revenue assessment, the availability of required supplies as well as credit at reasonable rates, the reduction of unnecessary expenditure on social ceremonies by a reform in the public opinion, the encouragement of thrift in the form of savings accounts or insurance, and specially education, which will not only facilitate most of the foregoing objects, but will also help to safeguard the peasant against exploitation.

Certain it is that the best hope of doing lasting good to the beneficiaries of the movement lies in visualizing their problem as a whole and directing the co-operative attack simultaneously on as many fronts as possible. As the late Sir Horace Plunkett has pointed out, "Co-operation will succeed only as an integral part of a comprehensive agricultural policy."¹ The Gadgil Committee also remarked that financial reconstruction could not be successful

¹ Plunkett, *Op. Cit.*, p. 4.

unless all the problems of agricultural economy are tackled as a whole; the attempt to raise a sound system of finance should be only a part of general problem of reconstruction, to place the agriculturist producers in a state of normal solvency.¹ Hence, in future, co-operation in India should attempt to tackle the problem of agricultural improvement, 'as a whole' and not piecemeal. The village co-operative credit society should not only provide cheap capital, but should help the farmer to raise his income, reduce his expenses and improve his standard of living.

The primary society in the village should be reconstructed on sound lines as indicated by the Reserve Bank of India, *viz.*, the village credit society should take up the whole life of the village within its ambit; it should aim at including every one in the village; it should have constant dealings and maintain continuous touch with its members and it should try to adhere more to co-operative principles. To attain these objectives it is necessary that the village co-operative society should also include within its functions, in addition to the supply of credit, the supply of agricultural implements and the promotion of co-operative marketing and subsidiary industries, *i.e.*, it should work as a multi-purpose society. In fact such an integration of the provision of credit with supply and sale, as pointed out by Dr. C. R. Fay, has been forced upon the agricultural co-operative movements of countries in Europe and the New World also. "The new emphasis is everywhere on co-ordination, not indeed on the undifferentiated society, but on the association of finance with trade supplies and marketing, on a credit central which has the whole position of the borrower under review. This development is fast reaching down the old time-honoured barriers and is making the example of the pre-war Denmark less and less relevant to the co-operative world of to-day."² An enlargement of functions of the village credit society is, therefore, an essential line of development in India. This will not go against the co-operative theory, in fact, it will make Indian village credit society conform more closely to the Raiffeisen pattern.

Reserve Bank's Suggestions

With a view to improve and strengthen the working of the societies the Reserve Bank of India has made some very far-reaching recommendations. They may be summarised as below:³

(1) The overdues and the long-term loans of the societies should be separated from the short-term loans and placed on a

¹ Gadgil Committee Report.

² C. R. Fay, *Co-operation at Home and Abroad*, Vol. I.

³ Reserve Bank's *Review of the Co-operative Movement in India*, (1939-40).

proper footing. For this purpose, the overdues should be scaled down to such extent that their redemption from the agricultural profits is made possible within a period of 20 years, by being written off from reserves in part and recovered in part from the sale of members' assets, and the remainder spread out in instalments and transferred to land mortgage banks. Such a course will prevent withholding of further finance or wholesale liquidation of societies in arrears.

(2) The co-operative societies are advised to build up strong reserve funds by providing for an adequate margin between their borrowing and lending rates. This would help them to tide over unfavourable seasons (when crops may fall), when their members are not able to repay loans. Remissions and extensions can also be granted.

(3) Loans should be restricted to productive purpose including limited advances for supplying intermediate credit for purchasing cattle and implements. Loans for the other unavoidable purposes should be reduced to a minimum and kept within the repaying capacity of the cultivators, who should be discouraged to borrowing from more than one source and his total liability should be limited according to the value of land or its rental.

(4) Primary societies should be federated into small Banking Unions on the lines of the Kodinar Banking Union in Baroda district, which will be able to concentrate in their hands all the functions of finance, supervision and education for which different agencies are employed at present.

(5) Co-operative marketing should be developed by making a start from the bottom. The societies should, therefore, be induced to take up joint marketing of agricultural produce of their members and should be linked up for this purpose with the Central Sale Societies. This will secure the benefits of handing produce in bulk, uniformity in quality and storage and collection.

(6) The Central and State Co-operative Bank should be reorganised to maintain sufficient fluid resources to provide for the withdrawal of deposits, build up adequate reserve funds and make a strict provision for setting out overdues in the balance sheet in such a way as to present a true picture of their condition. Co-operative banks should establish a closer contact with the Commercial Banks and take the latter's advice in organising their business, and have some professional bankers on their boards. They should also make adequate provision for the training of their staff.

(7) Provision should be made for the intensive training of the co-operative staff in Co-operation, Rural Economics and Theory and Practice of Banking, Accountancy and Book-keeping.

Essentials of the Success of the Co-operative Movement

In drawing up a plan of co-operative development we have to make certain assumptions without which co-operation can scarcely succeed in its high mission. *Firstly*, it presupposes such economic conditions as are absent in India. It presupposes the existence of savings but the Indian cultivator is thriftless and he is overburdened with the weight of the crushing debt. *Secondly*, it presupposes the educational progress. In fact, the pace of co-operation progress will be governed by the pace of the educational progress in the country but unfortunately the cultivator is hopelessly illiterate and ignorant. *Thirdly*, it presupposes for its success spontaneity of demand and initiative on the part of the people and some readiness to adopt its principles. But such qualities are badly lacking in India. The Movement was sponsored from the top and hence, when we think of co-operation in India we recall to mind the mercenary Registrar, and not as in Germany, the missionary, the humanitarian and the philanthropic Raiffeisen. Hence, the notion that co-operation is a Government charity or the society being called the "Sarkar's Bank" militate against the success of the movement. Illiteracy of the people leading to the difficulties of management, supervision and formation, the selfishness of the committees of management, and nepotism in advancing loans and unpunctuality in repayment coupled with apathy and long overdues are further obstacles in the way of the movement.

Writing about the co-operative movement in Denmark Sir John Russel observes, "The outstanding instance of success in co-operation is Denmark (a land of small farmers) and it has given them a standard of living which is the envy of the civilized world. Four essential conditions of success are all present in Denmark, *viz* ;

(i) The village population is homogeneous; there being nothing corresponding with caste distinctions.

(ii) The cultivators are all literate.

(iii) From the outset People's High Schools were set up where the villagers were taught better living both in the home and the village and where the ideas of corporate responsibilities in village and national life were inculcated.

(iv) The co-operative societies are mostly trading societies taking over the produce from the cultivator, working it up into a marketable form and selling it for him. Also they supply him with all materials in use in the home and on the farm. They are mainly financed by the local banks, and the members are jointly and

severally liable for the loan. As depositors the members provide a substantial part of the funds, it is their own money that is lent to the members, and in consequence each borrower feels himself under the necessity of repayment.¹

Unfortunately none of these conditions obtain in India. The remedy lies in making primary education compulsory and in providing careful organisation, inspection in businesslike financing. Whenever the co-operative movement was taken stock of by a Commission or a Committee the need for the co-operative education was always stressed. MacLagan Committee, Banking Enquiry Committees both Central and the Provincial, and the Royal Commission on Agriculture, the Congress Agrarian Reforms Committee, the Co-operative Planning Committee and the Planning Commission have all attempted to emphasise, the importance of co-operative education and training. "That there is need, therefore, for intensive co-operative education and training for all ranks of co-operative workers, paid and honorary, as units in the co-operative army able to work intelligently, individually, and in groups, for the realization of co-operative ideal is admitted. We feel that the various piecemeal arrangements made from time to time should be superseded by a scheme planned as a whole."

It is being increasingly realised that the co-operative society cannot confine its activity merely to the provision of credit or catering for the daily necessities of its members ; its aim should be broader and embrace all aspects of the individual's life. It is thought that there is a vital need for the co-operatives to direct their attention more towards the social well-being of the community and undertake all such activities as would make for social betterment and provide necessary amenities for the people. In fact, this is no new idea and the pioneers of the Movement gave expression to this even at the birth of the Movement and laid special emphasis on the 'social service' aspects and responsibilities of the Co-operative Movement. To them social activity was as important as economic activity, is not more

Co-operative Development in Western Countries

In Western countries where Co-operation has made progress, we see that the ideas "of improving the situation of its members both materially and morally" put into practical shape and the Movement there has touched prominently not only the economic but the educational and cultural fields as well. For instance, in England this has become a tradition ; the belief has been to make the welfare of all, the aim of each ; to give to trade and

1 John Russel, *Report on the Working of the Imperial Council of Agricultural Research*, p. 63.

commerce, a moral basis and by co-operative effort to raise the standard of life. The most important element of the British Movement, it is stated, is not its vast trade or capital resources but its social service to the members and the general public. Immense sums of money are given by the societies every year to hospitals, convalescent funds, scholarships, benevolent institutions and for charitable purposes generally. Much of the social life in the small industrial towns and large villages centres round lectures, concerts and gala days organised by the local co-operative society. There are societies which provide for holiday making, recreations, clubs, libraries, funeral services. Approximately between £150,000 and £200,000 are spent every year on charitable purposes by co-operatives in England. Through the Co-operation Union the Movement touches every field of English life from "Parliament to peasant". It guides the policy of the Movement and shapes its social, educational and political outlook.

There are various fields of economic and social effort in America that have been covered by co-operative ; and American Co-operation is recording varied and interesting developments in new fields. Co-operatives there provide a wide variety of social services for their members. There are co-operatives for providing health services and medical aid ; for the organisation of book clubs, for organising recreational associations and providing funeral services. Co-operative institutions have a social and spiritual value and in America it is stated, "they are putting a soul into the economic system, and soul which puts service first and profits second."

Similarly Danish Co-operation has penetrated into all walks of life and included in its purview are many new activities of a communal nature. The profits of the co-operative institution once made, are not distributed merely for the private benefit of the member but for a variety of praiseworthy social purposes. The co-operative banks use a proportion of their profits for the advancement of education and other social objects. The Co-operative Theatre Organisations provide recreation at cheap rates.

A Pilot Plan suggested

As we have seen above that India is an agricultural country where the peasants have to depend on the money-lenders and other agencies for the supply of finance to carry on agriculture and make necessary improvement on the land, hence we herewith produce a pilot scheme for organising the cultivator's co-operative as follows :

1. A bank may be established in a village, surrounded by commercial crops like sugarcane, cotton, tobacco and the like. The rules should be so framed that there is the least difficulty in.

getting a loan on the security of standing crops. The interest should not exceed 6 per cent. The capital may be raised by the shares of the members and lump sum contribution from the Government. In case this is not possible either the Reserve Bank or some reliable private bank may be induced to start the work. As soon as the crop is ready the recovery may be made by purchasing the produce of the land at market prices, which should be conditional to the grant of loan. The rest of produce may be disposed of by the producer at his option.

2. The members of the bank may be entitled to a loan of seed at sowing time at normal rate of interest to be paid back in kind at the time of harvest.

3. The members of the bank may be entitled to free technical advice in regard to matters relating to soil, irrigation and marketing, etc.

4. The needs of the members of the bank may as far as possible be met from stores opened by the bank in the village.

5. The bank may undertake to grade the produce of its members and sell their produce at the highest possible price.

In fact the bank can take up each one of the problems of rural life and try to find in what manner it can assist the villager by linking his expenditure and increasing his income. When the bank assists its members in the improvement of economic position the tendency to adhere to the institution would be great.

So far as the technical help to cultivators through banks is concerned the Government should either give some subsidy to them or place the services of experienced qualified hands for necessary advice and propaganda in the jurisdiction where the bank is to play its role.

In order to start the works, it is necessary to survey the villages in which this pilot scheme should be launched. The information in respect of (i) total population of the village; (ii) total number of holdings in the village; (iii) total national income of the village; (iv) average daily per capita income; (v) average indebtedness; (vi) nearness to railway station, road, communication and marketplace should be collected and the scheme framed accordingly.

In order to popularise the scheme based on the lines indicated above, the villages selected must be those where the percentage of literacy is quite high so that the residents understand the principles of the pilot scheme.

The co-operative multipurpose unit bank, as said above, will be the nucleus of the co-operative reconstruction in the village. It will link up all the activities connected with the plans of development of agriculture. The essential conditions fulfilling such organisations should be :

1. The bank must take up the whole village within its ambit.
2. It must aim at including every one in the village,
3. There must be great adherence to essential principles of co-operation.
4. There must be constant dealings and continuous touch with the members.
5. Concentration on a few selected areas in the first instance must be aimed at rather than wide diffusion and multiplicity.

The above plan, if properly organised, co-ordinated and developed, would make available to agriculturists at cheaper rate, supplies not only of agricultural requisites but of household goods and they will be able to sell their produce at better rates. When the finance and other needs of the cultivators are linked up with other activities closely, the picture will be different from what it is at present. The cultivator will then take more interest in the movement.

LONG-TERM AGRICULTURAL CREDIT

Types of Land Mortgage Banks

It is now an admitted fact that the most suitable agency for supplying the long-term financial requirements of the cultivator is the Land Mortgage Bank. The Indian Central Banking Enquiry Committee classified such banks into three categories; co-operative, non-co-operative, or quasi-co-operative.

(1) The co-operative type is represented by the Persian Farm Mortgage Mutual Credit Association which are associations of the borrowers without capital. The expenses are met from the income of entrance fees paid by the members. Mortgage bonds bearing interest and made payable to bearer are used to raise the necessary credit. These *Landschaften* are combined into a Central *Landschaft* which is a central co-operative organisation. The Federal Farm Loans of America also belong to this type. Land Credit Associations of Denmark, Norway and Sweden also represent the co-operative pattern.

(2) The non-co-operative type is represented by the Joint Stock Land Mortgage banks which exist in European countries. They work for profit and declare dividends and they are subject to state control so that hardship may not be caused to borrowers. The French model of *Credit Foncier de France* and the Agricultural Bank of Egypt, the Mortgage Bank of Kingdom of Denmark, Mortgage Bank of Kingdom of Norway, and Royal Mortgage Bank of Sweden belong to this type. The Agricultural Mortgage Corporation which was set up in England in 1928 to give long-term loans to land-owners at a moderate rate of interest also belongs to this type. Its funds are drawn from its registered capital amounting to £650,000 bonds carrying a Government guarantee of about £11,000,000 and Treasury advances up to a total of £7,50,000.

(3) Other institutions are of a quasi-co-operative character. They are associations with membership of borrowers and non-borrowers operating over fairly large areas and formed with share capital and on a limited liability basis. The Hungarian Land Mortgage Institute for large land-owners is an example of this type.

In countries like England, Ireland, U. S. A., New Zealand, Canada, Australia and South Africa loans are granted by these banks of the farmers for improvement of land, provision of irrigation fencing, transport and drainage facilities, construction of

colleges and buildings necessary for agricultural operations and storage of agricultural produce, purchase of farms; agricultural implements connected with the development of agriculture and repayment of past debts. But in India these banks besides providing loans for improvement of lands and method of agriculture, purchase of land and costly machinery also give loans for the repayment of old debts. In India L. M. B. are organised on co-operative basis, but since individuals are also members of such banks, actually they are semi-co-operative in nature.

Brief Historical Retrospect

The Registrars' Conference, which was held in 1926, the Royal Commission on Agriculture and the Central Banking Enquiry Committee made several recommendations regarding the development in the organisation of land mortgage banks which has ever since guided the destiny of these banks in India. Most important of these were :—

1. Land mortgage banks should be organised under the Co-operative Societies Act. The area of operation should not be too large as to become unwieldy nor too small as to be uneconomic.
2. The principal objects for which loans may be advanced should be (a) redemption of land and houses of agriculturists, (b) improvement of land in methods of cultivation, (c) liquidation of prior debts, and (d) purchase of land in special cases.
3. Loans should not exceed half the value of properties. Maximum and minimum limits should be set. The minimum should be such as primary society cannot conveniently give.
4. L. M. B. should provide a suitable agency for distribution of loans under the Land Improvement Loans Act.
5. No loan should be advanced which is not economically profitable to the borrower.
6. The amount and period of loan should be fixed with due respect to the repaying capacity of the borrower and also to the purpose for which loan is advanced.
7. Under the existing circumstances the period of loans should not exceed 20 years.
8. The primary credit society should be consulted and its opinion obtained in the case of a loan application received from a member of the society.
9. Government should grant subsidies to land mortgage banks in the initial stages of their working. All existing concessions in the form of stamp duty and registration fees should be continued in favour of land mortgage banks. The land mortgage banks should be given power of fore-closure and sale, subject to certain safeguards without recourse to law-courts.

The development of L. M. B. in India has been generally on the lines of the recommendations mentioned above.

Attempts were made in India as far back as 1883 to provide financial facilities when the Land Mortgage Bank of India was started on the model of the Credit Foncier de France but the bank could not succeed because of over-investments without the necessary safeguards. A land mortgage bank was registered on 30th June, 1920, at Jhang in Punjab but it has had a chequered history. The reasons for this condition were :—

1. Proper valuation of the property was not made and loans were often advanced carelessly.
2. The fall in value of land at the time of depression reduced the value of security.
3. Bank directors and workers themselves were heavy borrowers.
4. The fall of the price of produce.

A real beginning in Land Mortgage Banking was made with the establishment of the Central Land Mortgage Bank in Madras in 1929 on co-operative lines. Today there are 73 primary banks. They had owned funds of Rs. 31.72 lakhs and a working capital of Rs. 363.20 lakhs. The land mortgage banks advanced to the agriculturists a sum of Rs. 48.07 lakhs. Loans are given up to $\frac{1}{2}$ of the value of land and the Central L. M. B. charges at $5\frac{1}{2}\%$ while the primary banks charge to the ultimate borrowers interest at $6\frac{1}{2}$ per cent. It raises its funds mainly by issue of debentures which are guaranteed. These loans were generally given for repayment of old debts, purchase of land and land improvement. The Madras Central L. M. Bank had a working capital of Rs. 454.80 lakhs in 1953-54. Of this Rs. 389.89 lakhs represented borrowings in the form of debentures. The loans advanced to primary banks increased from Rs. 72.24 lakhs in 1949-50 to Rs. 82.84 lakhs in 1951-52 and Rs. 105.04 lakhs in 1953-54. The Bank issued two series of debentures for a total face value of Rs. 112 lakhs, both bearing interest at $4\frac{1}{2}\%$ and maturing at the end of 20 years.

It has been rightly remarked by the President of the Madras Co-operative Central Land Mortgage Bank, Ltd., that "cheap credit forms an important item in any programme for the amelioration of agriculture." This has long been recognised by the Government and all along they have helped the Land Mortgage Banks in a number of ways by guaranteeing the principal and interest on the debentures, sanctioning temporary accommodation to finance loans till a debenture loan is floated, lending necessary governmental staff for appraisal of the property offered for mortgage for periodical examination of the mortgage banks and the conditions of their security in subsequent years and officers for super-checking their work. All this has attracted money from outside. Other facilities offered by the Government are : (1) Half the registration fee is charged ; (2) Only half the fee is charged to get a certificate to know that a particular land is from mortgage ; (3) Settlement maps and Gazettes are supplied free and (4) they can acquire the land for non-payment of loan. "Several factors

have contributed to successful development of land mortgage banking in Madras. Special mention may be made in this connection of the care exercised in selecting the area of operation of primary banks, valuation of land examination of the title, assessment of the repaying capacity of the borrowers, promptness with which recoveries are affected and general efficiency in working of primary banks. Close supervision followed by the Government and the cautious policies followed by Central Land Mortgage Bank together with its own efficient management have contributed to the success in a large measure."

In Bombay the primary land mortgage banks were organized as an experimental measure in 1929 and they were financed by the Bombay Provincial Co-operative Bank. With the organisation of a Provincial Land Mortgage Bank in 1935, more primary banks were organised and their number increased to 17 in 1939-40 but it decreased to 15 by 1948-49 on account of the amalgamation of the primary banks, the number increased to 18 in 1953-54. The loans are raised for 10, 15, and 20 years and the debentures are guaranteed by the Bombay Government both for the interest and the principal. The money is advanced for repayment of past debts, improvement of land, purchase of land. The owned funds rose from Rs. 9.40 lakhs to Rs. 11.48 lakhs and its working capital from Rs. 105.67 lakhs to Rs. 153.76 lakhs from 1951-52 to 1953-54. Two series of debentures were issued by the banks for Rs. 25 lakhs each at $4\frac{1}{2}$ per cent., the first at Rs. 98, and the other at par. The fresh loans advanced amounted to Rs. 12.50 lakhs, and outstandings amounted to Rs. 83.20 lakhs and were dues to Rs. 3.07 lakhs.

The following table gives the operation of Land Mortgage Banks both Central and Primary¹ :—

Operation of Land Mortgage Banks in India since Independence

	CENTRAL LAND MORTGAGE BANKS			
	(Rupees in lakhs)			
	1946-47	1948-49	1951-52	1953-54
Number of Banks	5	5	6	9
Membership	6,493	8,127	34,769	49,753
Owned capital	44.61	50.90	80.85	103.49
(Rs. lakhs)				
Deposits and other	42.54	19.55	152.94	144.13
Borrowings				
Debentures	429.03	526.90	782.79	114.54
Working Capital	516.18	597.35	1016.58	1392.66
Fresh Advances	62.74	103.40	250.65	192.40
Outstandings	342.72	449.24	805.33	1035.16

¹ *Review of the Co-operative Movement in India* (1946-48), 1950, *Ibid.*, (1948-50), 1953, and *Ibid.*, (1950-52), p. 61, *Ibid* (1952-54), 1956, pp. 211, 212.

PRIMARY LAND MORTGAGE BANKS

(Amounts in lakhs of rupees)

	1946-47	1948-49	1951-52	1953-54
Number of Banks	268	263	289	291
Memberships	1,39,075	1,71,911	2,13,814	2,65,186
Owned capital	46.16	54.30	73.45	96.25
Deposits and other Borrowings	348.28	451.06	675.50	851.20
Debentures	6.50	9.56	8.54	7.81
Working capital	400.94	514.39	759.49	955.26
Fresh advances	66.75	114.60	129.59	—
Outstandings	358.62	476.20	696.48	878.86

Special Features of the Working of L. M. Banks

There has not been an outstanding development in the field of land mortgage banks. But in view of the increased agricultural production as well as to pay off debts the fresh advances of central land mortgage banks increased from Rs. 62.74 lakhs in 1946-47 to Rs. 192.40 lakhs in 1953-54 while the amount of outstanding loans increased from Rs. 342.72 lakhs to Rs. 1035.16 lakhs. In the case of primary land mortgage banks the increase in fresh advances has been from Rs. 66.75 lakhs to Rs. 140.50 lakhs and the increase in outstanding loans from Rs. 358.62 lakhs to Rs. 878.86 lakhs. These amounts are small as compared to the need of the cultivator for the long-term credit.

(2) The advances are made generally for redeeming past debts, although under the by-laws they are allowed to make loans for land improvement and to purchase land for rounding off holdings. The following table shows the purpose-wise analysis of loans advanced by the Land Mortgage Banks in Bombay, Madras and M. P. (In Lakh Rs.).

Purpose	Bombay	Madras	M. P.
1. Discharge of prior debts	3.36	39.41	9.04
2. Land Improvement	6.00	7.18	1.22
3. Purchase of Land	2.29	1.48	0.80
4. House Societies and Joint purposes	0.85	...	...
	<hr/> 12.50	<hr/> 48.07	<hr/> 11.06

(3) The funds are raised mainly by debentures and also by selling shares. The borrowers are required to subscribe to the share capital an amount equal to 5 per cent of the borrowings. Debentures have been the chief source of land mortgage capital

not only of the Central Land Mortgage Banks in Madras, Bombay, Mysore and Cochin but also of primary land mortgage banks in Baroda and in Assam on a smaller scale.

(4) The Royal Commission on Agriculture accepted the principle of basing borrowing power of members on a multiple of their holdings in the share capital, the multiple varying from State to State. In some provinces a maximum in rupees is fixed for the loan. The maximum has sometimes been given a multiple of land revenue, 50 per cent of the value of land is accepted in several provinces as the maximum that can be lent by a land mortgage bank. The maximum is laid down with a view to see that the facilities provided by the Land Mortgage Banks are utilised and enjoyed by as large a number of farmers as possible and not monopolised by a few big landholders. The maximum amount that can be lent to a member is Rs. 10,000 to Rs. 15,000 which in some banks has been reduced to Rs. 5,000. The minimum limits are about Rs. 400 and sums below this are generally obtained from the primary societies.

(5) The lending rates vary from State to State from $1\frac{1}{4}$ to 10 per annum. The borrowing and lending rates of the central and primary land mortgage banks in some states in 1951-52 are given below :—

States	Central Bank's Borrowings	Rate of Lendings	Primary Bank's Borrowings	Rate of Lendings
Madras	3 to $4\frac{1}{2}$	$5\frac{1}{2}$ to $5\frac{1}{2}$	5	$6\frac{1}{2}$
Bombay	$2\frac{1}{2}$ to $4\frac{1}{2}$	4 to $7\frac{1}{2}$	$1\frac{1}{2}$ to $6\frac{1}{2}$	$3\frac{1}{2}$ to $8\frac{1}{2}$
West Bengal	...	...	$4\frac{1}{2}$	8
Bihar	...	...	...	...
Orissa	4	7	...	...
U P	3 to $3\frac{1}{2}$	$6\frac{1}{2}$	5 to 6	$7\frac{1}{2}$
Madhya Pradesh	3 to 5	$4\frac{1}{2}$ to 5	$4\frac{1}{2}$ to 5	$6\frac{1}{2}$ to 7
Assam	...	...	10	$6\frac{1}{2}$ to 8
Ajmer-Merwara	...	...	6 to $7\frac{1}{2}$	8 to 10

There is no justification as to why the mortgage societies in States should charge as high rate of interest as 10 per cent. We are of the opinion that the land mortgage banks should have a margin of 1 or 2 per cent so that the farmers may derive maximum benefit from them. The Gadgil Committee and the Saraiya Committee recommended that the government should give the subsidies necessary to make possible a 4 per cent rate to agriculturist for long-term finance.

(6) Dividends are restricted and the aim is gradually to eliminate the non-borrowing members. But the work of these banks lack the personal and human elements which are the main features of the co-operation and the insistence is not on the member's knowledge of or control over one another but on the business capacity of the management for the purposes of the correct valua-

tion of security, careful enquiries into titles to land and the correct determination of the credit and the repaying capacity of the borrowers. In several States no dividend is paid on shares ; in Madras the usual dividend is 5 per cent of the central and 5 per cent for the primary societies ; in Bombay it is $3\frac{1}{8}$ and $3\frac{1}{2}$ to 6 per cent respectively. The highest dividend at $6\frac{1}{2}$ per cent is paid in M. P.

Defects in Working and Suggestions for Reform

We may judge the progress of these banks from any point of view, the number of banks, the number of members, loans granted, owned funds or profits, all tell the same tale. We have to find out reasons, therefore, and suggest the necessary remedies in the light thereof.

(i) The development of the land mortgage banking has not been uniform in all parts of the country. In 1951-52 there were only 6 Central Land Mortgage Banks in existence. Since then three more such banks have been set up so that in 1953-54, there were 9 Central Land Mortgage Banks in India—one each in Andhra, Bombay, Madras, Orissa, Hyderabad, Mysore, Saurashtra, Travancore-Cochin and Ajmer. Besides there were 291 Primary Land Mortgage Banks of which 56 were in Andhra, 2 in Assam, 18 in Bombay, 12 in M.P., 73 in Madras, 6 in U. P. ; 9 in West Bengal, 10 in Hyderabad, 1 in M.B., 82 in Mysore, 10 in Rajasthan and 12 in Ajmer. As there are no primary land mortgage banks in Saurashtra, Orissa and T. C., the Central L. M. B. in these States deal directly with the individuals. In order to make these banks effective in solving the difficulties of the cultivator, it is necessary that each State should have a Central L. M. B. and a number of primary L.M. Banks. The imperative necessity, therefore, is to start Central L. M. Banks in those States where they do not exist and to increase the work of the existing primary land mortgage banks and to start primary L. M. Banks in other States which do not as yet have them.

(ii) In many cases the working is inefficient. As a general rule the directors of primary land mortgage banks lack the necessary initiative. The income of the banks is not sufficient to enable them to have an upto-date organisation. The main source of their income is the difference between the rate paid by them to higher institutions and the one at which they make loans to agriculturists. In 1953-54 the rates of interest charged from the ultimate borrower varied between 6% to 9% except in the case of Bombay, where for same purposes a rate of $3\frac{1}{4}$ % was charged and in Mysore for same purposes a rate of $4\frac{1}{2}$ % was charged. This is insufficient to employ even the necessary staff. In some States the method of appointing land valuation officers is such that it is not possible to have an experienced land valuation staff.

Clerks of the co-operative department with a month's training or so in the land valuation work are appointed as land valuation officers. In this connection the Government should come to their rescue by meeting some of these expenses. The cost of management of these banks will have to be reduced to enable them to reduce the rate of interest and to make them yield adequate return on the money invested.

(iii) "The success of land banks", says the Reserve Bank Review, "depends upon accurate land valuation offered as security and the determination of the annual repaying capacity of the borrower, adjustment of loans and the terms of repayment and the recovery of the instalments punctually." Instalments should be punctually recovered, failing which land banks may not be able to obtain the necessary funds through debentures. These defects can be removed by keeping suitable staff. Further there is much scope for improvement in respect of raising funds by debentures. They have been able to float debentures at low rates because of Government guarantee and because they are declared as trustee security. What is necessary is that their working should improve so that the investor should have confidence in them and their debentures may find an easy market. In this connection the advice of the Reserve Bank of India should be sought for and there should be greater liaison between these banks and Reserve Bank of India.

(iv) Data regarding farm income and operating and living expenses are quite meagre. There is no organised study of agricultural economic conditions by a Research Bureau attached with the Government Co-operative or Agricultural Departments. In the absence of such studies, the repaying capacity of the borrowers is calculated on a very rough basis which is hardly scientific and accurate. The repayment instalments are not properly geared to the normal earning power of the agriculturist. This results in the foreclosure of loans much earlier than the due date or the repayment of loans by re-mortgaging the hypothecation to money-lenders or by outright sale of a part of it.

Instalments for repayments should, therefore, be based on the annual net surplus or the repaying capacity of the borrower. Research organisation should be developed. It will lead to more accurate information on various aspects of agricultural economy, viz., farm income, operating expenses, family expenses, loss on unforeseen calamities, etc. Recoveries should begin when the investments start yielding returns particularly in the case of those cultivators whose previous savings are not adequate to repay the instalments. If the return on an investment is low in the beginning and rises afterwards the amount of instalments may also be varied accordingly.

(v) Delay in grant of loans, inelasticity in rules governing their grants, inadequacy of amounts, demand of high security, rigid realisations and annuity instalments not well adapted to the repaying capacity of the borrower are some of the other defects which still linger on. It takes 6 to 9 months to sanction and grant a loan. A second loan is not granted unless the first is cleared off. This provision operates very harshly as the agriculturist who borrows once from the Land Mortgage Bank cannot get another long-term loan for land improvement or purchase of costly machinery for a long period of 20 years. The postponement of instalments is not permissible even in genuine cases of hardships arising from failure of crops.

It is suggested that the applications for the long-term loans should be forwarded by the village Co-operative Societies with their recommendation to the Land Mortgage Bank. After a proper scrutiny of the applications, loans should be granted. Such loans should be granted to only creditworthy agriculturists against tangible services. The proper use of loans should be effectively supervised through the Extension Service Staff and the village Co-operatives. The by-laws governing the land mortgage loans should be amended to allow extension of time for repayment of loan instalments in special cases of failure of crops due to natural calamities like drought, excessive rains, fires. Central L. M. Banks should also publish pamphlets indicating in simple words the procedure and requirements to be satisfied by the cultivators in obtaining loans.

(vi) Another defect in their working is that they concentrate too much on the redemption of old debts and too little on the improvement of land and agriculture. Of course, to a certain extent in the existing conditions in India it is inevitable but efforts should be made in order that land mortgage banks may pay attention to question of granting loans for agricultural and land improvement to a greater extent than has been possible hitherto. This would require close co-ordination between the land mortgage banks and the Agriculture Department. The latter should advise the agriculturists on improvement scheme which would then be fit objects for granting loans for land and agricultural improvements. In this connection the recommendation of the Thirteenth Conference of Registrars was that land improvement loans be advanced at a lower rate than loans for other purposes.

Ordinarily they should be given in consultation with Agriculture and other Departments. Land mortgage banks can also do much to promote schemes of consolidation of holdings, particularly where fragmentation has reached a very bad stage. They should develop other lines of business than merely granting loans for

repayment of old debts in order that they may become minimum economic working units. Many reasons have been given for the small amount of loans granted for land improvement, *viz.*, heavy indebtedness of borrowers, provisions in the by-laws requiring repayment from the very first year, absence of the necessary organisation for supervising the use of such loans and absence of scope in this respect in a country of small holdings. As a matter of fact, land mortgage banks can prove of great assistance only if they concentrate on the wide range of agricultural operations relating, *inter alia*, to drainage, reclamation of land, promotion of rural industries and similar other matters. Land mortgage banks can particularly help in providing funds to facilitate exchanges of land on requiring payment of money and by giving concessions in loans to those who have consolidated their holdings. There is great need in some places for providing better irrigation facilities and for purchasing agricultural machinery. Prevention of erosion is another important matter requiring considerable finance. Consequently detailed investigation is necessary in regard to the ways in which agricultural improvements can be done. The emphasis of land mortgage banks should be on the loans for productive purposes. Further, the loans should be rationalised (a) by charging higher rates of interest on second and third loans, (b) by giving loans for smaller periods so that the increased income from land may be prevented from being diverted to purposes other than redemption of loans, and by (c) paying due attention to the loan.

Lastly, there should be proper co-ordination between the land mortgage banks and other co-operative organisations in order that land mortgage banks may be able to maintain contact with the borrowers. The debts of members could be paid off out of a loan from the land mortgage bank. The short-term finance can be supplied by the society and the sale of the produce of members could be done co-operatively through a marketing society. The instalments of the land mortgage bank and the loans of the society could be regularly paid and thus better co-operative banks. In such cases the co-operative society should have a first charge on the crop.

AGRICULTURAL MARKETING

Need for Systematic Marketing

Marketing plays an important part in the national economy of the country. The process of agricultural production cannot be regarded as complete without the sale of the produce. One-sided reform of higher agricultural production alone cannot profit the tiller of the soil. Side by side with the progress in cultivation methods, an advance should be made towards efficient sale of his produce. Without a developed marketing system the farmer labours under distinct disadvantages inasmuch as his sales are so many isolated acts without any plans. He sells immediately after the crops are ready due to pressure of his creditor to return the loan. Frequently he has neither the facilities of marketing nor the business ability. Even if the production side is strengthened and cultivation improved the peasant would not gain much as the benefits of better farming would probably be reaped by middlemen intervening between them and the ultimate consumers under the present system of marketing.

Agriculture is dependent on many factors over which man has no or little control. We can never be sure of the supply, not to mention the quality of the farmer's crops. We cannot regulate agriculture at will but, if we cannot determine production and supply, we can through regulated and scientific marketing arrange the distribution in such a manner as to partly counterbalance the vagaries of nature.

Types of Markets¹

At present our rural markets are organised in the form of (i) *Painths* or *Hats* (as in U. P., Bihar and Orissa or W. Bengal) or *Shandies* in Southern India. At these markets, retail sales of fruits, vegetables, foodgrains, cloth, earthen wares, bangles, trinkets, take place either for cash or in exchange of house-hold requisites. They are held weekly or bi-weekly. The days on which these markets are held are usually fixed so as to enable itinerant dealers to visit them in succession in a particular area. Such markets are organised by Zamindars or local bodies and every shop-keeper has to pay some rent for the space he occupies. Here the higgling is a common feature. The village bania, (in return for a small commission) acts as a middleman. There are over 22,000 *hats* in India. *Hats* dealing both in agricultural produce and livestock are mainly found in Bombay, Madras and Andhra. These are also known as

1 K. R. Fulkarni, *Agricultural Marketing in India*, 1951, p. 195-217.

Primary Markets and cater to the needs of 5 to 10 miles' radius or even a bigger area. The amount of produce passing through a *hat* varies from 1,000 to 400,000 mds.

(ii). *Mandies on Secondary Markets* are wholesale markets held in fixed places where business is transacted daily. In these *mandies*, produce is handled in large quantities and specialised operations such as of weighmen, brokers and commission agents become necessary for the performance of different services. These *mandies* are usually owned by private persons or local bodies, e. g., by District Boards in Madras; by private bodies in Assam, Bengal, Bihar; and by Municipalities in M. P. or by Chambers of Commerce as in U. P. They have ample facilities of storage and banking in the forms of *Khatties* and *kothas* and banking and insurance companies; and are well served by roads and railways. Such markets draw their supplies from an area of 10 to 40 miles. The area served by a part market is generally very extensive and regulated markets assemble produce from a wider area than unregulated ones.

They may be decentralised markets—scattered over the different parts of a town or centralised markets where the *arhatiya's* shops are centred in a particular place as in Barsi and Belgaum in Bombay. There are over 1,700 *mandies* in India. They are the best forms of organised markets for the sale of agricultural produce, fruits and vegetables. Some of these *mandies* particularly in U. P. such as Meerut, Hapur, Hathras, Ghaziabad, Khurja and Agra, Amritsar and Lyalpur in Punjab, favour favourably with produce exchanges of foreign countries.

(iii) *Retail markets* are found scattered all over the town or a city or concentrated in particular localities. They are owned by retailers subject to municipal control. They usually deal in all types of produce and serve the needs of the surrounding villages.

(iv) *Fairs* have been a common feature in India for centuries. Generally fairs are held on religious festivals such as *Magh Mela* at Allahabad, *Kartiki Snan* at Garh Muktesvar, etc. But other fairs owe their origin to economic considerations. There are over 1,700 livestock and produce fairs in India. Of these 50% deal in livestock only; 10% deal both in livestock and produce and 40% deal in agricultural products only. Produce fairs are all found in Bihar and Orissa only, while livestock fairs are held in U. P., Bombay and W. Rajasthan. These fairs are held annually—specialty between the months of October and May and the duration of livestock fairs varies from one day to 3 months. Camels, horses, bulls, donkeys, cows, bullocks, sheep and goat are usually sold in the fairs. Such fairs are organised by District Officers, Local Bodies or private agencies.

(v) *Terminal markets* are the produce exchanges with trade associations conducting exporting and internal distribution of the commodities. Proper facilities for storage and commodious godowns are necessary adjuncts of such markets.

Processing of Agricultural Produce

After a crop is harvested and before it reaches the consumer, it is subjected to one or more forms of processing which differ for different crops and for different uses and preferences on the part of the consumer. A single form of processing may consist of more than a single operation carried out by different parties at different stages. Thus, paddy may be threshed and winnowed by the cultivator but husked by the miller, the trader or even the consumer. In more prevalent forms of processing of major crops there is a broad uniformity in this country. I indicate here, in brief, the principal methods of processing employed in respect of more important food and commercial crops.

Rice. The main form which the processing of rice takes is the husking of paddy. Sometimes rice is parboiled before it is husked. The husking may be manual as in hand-pounding, or by a power-driven machine as in a rice mill. The bulk of grain is hand-pounded, only 25% is processed by rice mills.

Wheat. Threshed and winnowed, wheat is still covered with earth; hence a large number of labourers are employed to clean it and dress it before passing it on to the retailer or the consumer.

Oilseeds. The processing of groundnut consists in removing the kernel from the nut by mechanical decorticators or by hand-shelling. Nuts for eating are generally mixed with hot sand and roasted and the kernels then taken out.

Tobacco. The operations involved in the process of tobacco are curing, sorting, 'bulking' (for fermentation) and reconditioning, followed by bundling and packing.

Sugarcane. Sugarcane is sold for being made into sugar or gur. Extraction of juice from the cane is largely done in the factories. 90% of the cane used for gur making is crushed in bullock-driven three-roller iron mills and about 7% by wooden or two roller iron mills.

Cotton. The bulk of the cotton produced is disposed of by the growers as *kapas*. Very little is ginned by the cultivator, he usually brings cotton to the marketing place which is sometimes the yard of a ginning factory.

Jute. The two main operations in the processing of jute are (a) steeping which involves the immersing of bundles of jute

plants in running water in order to soften the tissues of the plants, and (b) the stripping of the fibre. The processing is done by the cultivator who generally engages paid labour. Each labourer strips about half maund of fibre per day. The fibre is then left for about 2 days in the sun to dry and sold in bundles in *hats*.

Potato. The crop after harvest and before despatch to the market receives little attention in regard to preparation. After potatoes are harvested they are collected at a place on the field wherefrom either they are stored in the pits dug on the fields or removed to the villages from where they are assembled by the wholesalers.

Co-operation and Processing

Very few co-operative societies are engaged in processing of agricultural produce. A few co-operative societies in W. Bengal and Madras are known to be running rice mills. Very few of the 3,000 odd cotton ginning and processing factories are owned by the producers themselves on a co-operative basis, and most of them are situated in Bombay, which has 14 of such societies.

The Second Plan makes provision for developing co-operative processing on a substantial scale, especially for producing sugar, ginning cotton and crushing oil and baling jute. It sets out for the establishment of 35 co-operative sugar factories, 48 co-operative cotton gins and 118 other co-operative processing societies. The number of primary marketing societies to be organised during the plan period is 1800.

Ways of Sale in the Market

Sales of agricultural commodities are usually effected in one of the following ways :—

(i) *Under cover.* Under this system the buyer or his representative indicates the price he is prepared to pay by claspings the hand of the *arhatiya* or seller's agent under cover of a cloth and pressing or manipulating the fingers. The name and offer of the highest bidder are then publicly announced. This system prevails in Amritsar and Lyalpur in the Punjab and Hathras in U. P. for the sale of wheat and in Bombay, M.P. and Madras for the sale of rice. This system offers ample opportunities of cheating the cultivator since he is unable to follow the course of bids nor he is taken into confidence until the final bid is declared.

(ii) *By auction.* Under this system the *arhatiya* or the broker invites bids for the produce and the highest bidder is sold the produce. This system prevails in South India generally and also in Western U. P., east and central districts of the Punjab, M. P.,

Rajasthan and M. B. in case of wheat sale and in Bombay, Hyderabad, and Mysore in case of rice sale.

(iii) *By Private agreement.* Under this system the individual buyers may come at any time convenient to them and make their individual offers. These may or may not be acceptable to the seller and the decision is conveyed by him by the close of the working day. This system is common in Delhi, northern parts of the Punjab, and Agra, Kanpur, Fyzabad, Lucknow, Banaras, Muzaffarnagar in U. P., and M. P., Bihar and Rajasthan.

System of Marketing

Agriculture being an industry of slow turnover the farmer requires financial assistance to bridge over the gap between the sowing and harvesting of the crop. Again, the produce of his land does not always suffice for the whole year and he is compelled to seek the assistance for subsistence as well as for commencing his agricultural operations in the following seasons. Borrowings made by the cultivators are taken before the commencement of cultivation operations from middlemen, village *beopari*, factory-owner with undertaking that the produce after the harvest will be sold to him or through him. The real evil is the tendency of these intermediaries who exploit the ignorance and helplessness of the farmer to increase their profits by manipulating the rates.

With whatever limitations or natural calamities, the farmer who raises a good crop brings it to *arhatiya* (commission agent) to market his produce as soon as it is harvested. The *arhatiya* selected is generally the one with whom the grower has already had financial or business relations. Although there is no compulsion on the seller to take his produce to the commission agent from whom he has provisionally secured advances or loan in kind or cash, nevertheless the fear that the financial accommodation may be withdrawn in the future induces the cultivator to trade through his creditor. If the seller decides not to dispose of his produce on that day, he leaves it with the *arhatiya* who stores it for him until sold.

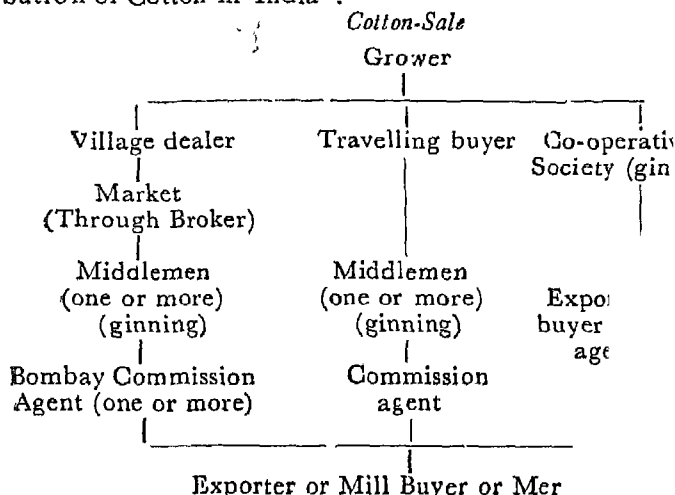
The produce left with the *arhatiya* is either stipulated to be sold at the latter's discretion or a price limit is given by the owner, below which sales are not to be made. There are in every market unwritten codes of conventions which govern the business. The *arhatiya* is supposed to be responsible for safeguarding his interests and to see that the sale is completed in conformity with the recognized market usage. In no market there is any authority over the *arhatiya* to see that the seller is fairly treated, that no unauthorised deductions are made, or that the *arhatiya* does not in any way subordinate the interests of the sellers to his own profit, there is no one to whom a seller can report if he thinks he has been cheated and who can decide matters in dispute. Nor is there in any market

regular organisation to keep a general eye on the interests of the sellers to see that none of the market practices is prejudicial to their interests or is unfair to them.

The Rural Credit Survey Committee Report says that about 35% of the total production is sold by the cultivator, a large part of it (about 24% of the total) to traders and commission agents, 15% disposed of in kind as wages or rent and nearly 8% utilised as seed. In the subsistence areas, in about one out of every three districts surveyed, less than 15% of the total produce was sold to professional traders and commission agents. In the cash crop areas, in one out of every eight districts, more than 45% was sold to professional traders and commission agents.¹

Of the total wheat production 45% is retained in the villages and 55% is the marketable surplus. For rice the respective figures are : 59.5 and 40.5 ; for jowar 76.2 and 23.8 ; for Bajra 73.5 and 26.5 ; for maize 75.5 and 24.5 ; for barley 74 and 26 ; for gram 55.7 and 44.3 ; for gur 20 and 80 ; for fish 7.5 and 92.5 ; for potatoes 27 and 73, for groundnut 16 and 84 ; for sesamum 44 and 56 ; for rape and mustard 14 and 86 ; for linseed 20 and 80 ; for castor seed 6 and 94 ; for cottonseed 5 and 95 ; for niger-seed 44 and 56 ; for cotton 8 and 92 ; for jute 3 and 97 ; for arecanuts 5 and 95 ; for cashewnuts 3 and 97 ; for tobacco 7.5 and 92.5 ; for sugarcane 82.6 and 17.4 ; and for milk 17 and 83.²

The following diagrams show the Normal Channels of Distribution of Cotton in India ³ :—



¹ *All India Rural Credit Survey Report*, V. II, 1954, p. 23.

² *Indian Agriculture in Brief*, 1956, p. 56.

³ Based on *Report of the Bombay Banking Enquiry Committee*.

We discuss below the marketing of rice.

MARKETING OF RICE IN INDIA

Rice is the most important crop of India, covering 76,253 thousand acres and producing 25,474 thousand tons (1955—56). In India three main crops of rice, *viz.*, *Aus* (autumn), *Aman* (winter) and *Boro* (summer) are grown of which the first two crops are more important and the last is the smallest crop.

Reaping of the crop is done by manual hired labour but the plant is not uprooted like the wheat. The plant when ready is cut by ordinary sickle and only the upper half is cut leaving the lower half for the cattle. To avoid over-maturing of the crop harvesting is done slightly earlier as even a short delaying of this operation will show "cracks across the breadth of the kernel and that breakage takes place during hulling at these points." Premature reaping also reduces the value of the grain by leaving it under-developed. Plants cut are bundled together and left in the sun to dry. The time of threshing differs in different places. *e. g.*, in Madras and the Punjab it may be threshed immediately after reaping while in M. P. and U. P., Bombay and West Bengal some time is allowed for the grain to dry out before it is threshed. This process is called "Curing".

Grain may be separated from the straw by striking "sheaves" against a block of wood or by leaving them to be trodden by bullocks. The impurities remaining in the grain/consisting of chaff dust, lumps of mud, pieces of stone—are removed by the winnower and is known as "winnowing" process. In many areas specially in West Bengal, paddy is parboiled before it is husked. Parboiling process consists in leaving the paddy in water and when the grain has swollen and has become soft, it is dried under artificial heat generated by steam so that a greater quantity and a better quality of rice is released. Milled-rice or that obtained through hand-pounding may be made to undergo dressing and colouring to improve its lustre or to make it more attractive, or hide adulteration and to render to it the impression of uniformity or make it appear a little older or lessen decaying elements in the grain and to improve its keeping quality.

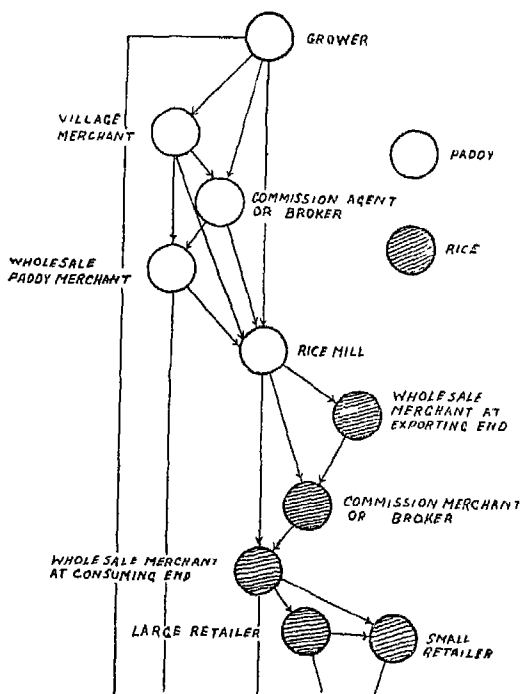
The supply of rice to the market is seasonal. It falls down as soon as the rains start because of the defective means of transport. They render the carriage of rice from the villages to the market very impossible and inconvenient. Of the total production of rice only 40.5 % is brought to the market and the rest is retained in the villages either for consumption or for paying the hired labour or for barter or for being used as seed and for the payment of land revenue and interest charges of the mahajans.

Assembling of the Crop

The crop after it is ready for sale is assembled by one or more of the agencies. According to the Report on Marketing of Rice in India the following are the main agencies :—

- | | |
|-----------------------------|------------------------------------|
| 1. Cultivators ; | 5. Itinerant merchants or |
| 2. Growers who collect the | <i>paikars</i> and <i>farias</i> ; |
| produce of others. | 6. Wholesale merchants ; |
| 3. Landlords or zamindars ; | 7. Professional dehuskers ; |
| 4. Village merchants or | 8. Rice mill agents ; |
| <i>banias</i> ; | 9. Co-operative organisations ; |
| 10. Government Agencies. | |

The following chart depicts these agencies :



1 Based on the Report of the Madras Committee on Co-operation, p. 245.

It is interesting to note that about 61% of the total Indian marketable surplus is assembled as paddy and 39 % as rice. The Punjab, Bombay, Madras, Assam, Mysore and Kerala contribute paddy in larger quantities ; while Bengal, Bihar, Orissa, U. P. and M. P. contribute rice.

The following table shows the share of each agency in assembling of rice.¹ :—

Agency	% of total surplus	Agency	% of total surplus
Growers	13·6	Professional Dehuskers	3·3
Landlords	6·8		
Village merchants	15·2	Wholesale merchants	19·2
Cultivators	2·1	Rice mills	13·1
Itinerant merchants	15·4	Co-operative societies	0·1
		Direct distribution in villages	11·2

The choice of the cultivators to market their produce themselves is very much limited due to poor finance, bad communications and long distances to the markets, their indebtedness to the village mahajan, etc. Thus very small quantities are brought by them to the assembling markets. Their retail sales to the consumers directly in Shandis and hats also form little quantity. The percentage of produce dealt by the cultivators varies from area to area and region to region, *e.g.*, in Punjab the percentage is 35 but in Kerala it is only 3.

Growers collecting produce for others are active in Assam, Madras, M. P., U. P. and Andhra. They purchase the produce of small cultivators in cash obtained from village *banias* or wholesale merchants.

Landlords and zamindars who collect rents and recover loans in kind are not an important agency except in Madras where their activities are mainly confined to the assembling of paddy.

The village merchants and *banias* are the most important assembling agencies due to their influence and position in the village economy. A major portion of the hand-pounded rice is assembled by him in West Bengal, Bihar and Orissa.

The itinerant traders known as *Farias* or *Beoparis* in Bengal, Bihar and Orissa and as *Ghumars* in the Punjab also assemble the produce either with their own money or that of the large *arhatias*.

¹ Report on the Marketing of Rice in India.

Professional dehuskers are confined mainly to West Bengal, U. P., Bihar and Orissa. They directly purchase the paddy from the growers or from hats and mandis and after converting it into rice by hand pounding sell it in the wholesale assembling markets. They are known by different names, e.g., malis, banjaras, kutankaras.

The representatives of the mills usually visit the villages and hats periodically and buy their requirements from the growers, the village merchants and the peripatetic traders. Sometimes advances are also made on the understanding that the crop when harvested will be delivered to them. Assembling by mills or their agents takes place largely in Madras, Bihar, Orissa, Bengal and Bombay.

The co-operative organisations assemble very insignificant amounts of paddy.

Markets

Paddy and rice pass through primary and secondary markets to terminal markets. Primary markets are known as *hats* in U. P., Bihar, Orissa, Assam and Bengal and M. P. and as *Shandis* in Madras and South India. Here the produce is marketed periodically through the brokers or commission agents. Wholesale merchants and mill agents purchase their requirements here. Secondary markets known as *mandis* or *ganjs* are permanent places where wholesale business is daily transacted. In the terminal markets the produce is finally marketed to the consumer or is assembled for final shipment abroad.

Market Functionaries

Important functionaries in the sale of rice are : *Arhatias* or *arhatdars* (commission agents and merchants), *dalals* (Brokers), *tolas* (weighment) and *palledars* or *hamals* (labourers).

The *arhatdar* operates in large assembling centres and finances *beoparis* and *farias* and his commission is known as *arhatdari* and *arhat*. *Dalals* help bringing buyers and sellers together. Their remuneration is known as *Dalali*. The *tola* may either be a paid servant of the *arhatiya* or be employed on commission basis. The *Palledar* helps in loading and unloading of the produce, assists in weighing, dressing and stocking and his wages are known as *palledari* or *hamali*.

Market Practices

There are very few regulated markets in rice except in Hyderabad. The hours of business vary little and are almost the same in various markets for all commodities.

Rice is generally brought packed in gunny bags while the paddy is brought in bulk. The seller brings his cartload of rice

and meets the *arhatiya* or his tout, who acts as the agent of the seller. Sales may take place in either of the three ways :

1. Under cover system is prevalent in Bombay, M. P. and Madras. The buyer or his agent indicates the price he is prepared to pay by claspng the hand of the *arhatiya* or seller's agent under the cover of a cloth and pressing or manipulating the fingers. The name and offer of the highest bidder are then publicly announced.

2. Auction system is common in Bombay, Andhra, Mysore and in Northern India. The produce is knocked down to the highest bidder.

3. Private arrangement is to be met with in Madras, M. P., U. P., Andhra, Mysore and Bombay. The buyers come to the seller's agent at any time convenient to them and make their offers.

The basis of sale is subject to deductions on account of impurity content, milling quality and moisture. In some cases it is assessed on visual inspection for each lot, while in others such deductions are fixed by custom, irrespective of the actual quality of the produce. Some deductions are made from the sale proceeds due to the seller, *viz*, commission and brokerage handling charges for cleaning, loading and unloading; weighing, filling and stitching of bags; dhalta, karda or dane; charities or dharmada and miscellaneous charges and taxes levied by urban administration, local bodies and Market Committees. Besides these charges, the seller has to tip the employees of these bodies to avoid inconvenience and delay.

Financing of Assembling

The following are the chief agencies for financing the assembling of the produce :

- (i) The village Bania, Sahukar or the Mahajan—they make the advance either in cash or in kind for grower's current needs and seed requirements. In the former case no interest is charged but they are repayable at *sawai* system. In the later case interest at the rate of half anna to one anna per rupee is charged.

- (ii) The village merchants, Commission Agents or Rice Mills—these agencies advance loans to the village merchants or beoparis at rates varying from 9 to 12 per cent. In return the debtors sell their collections to or through their creditors. Advances on the security of stocks lying with the village beopari are also made. The wholesale merchants are in their turn financed by shroffs, indigenous bankers or the joint stock banks at 4 to 12 per cent.

(iii) The Banks—they advance loans up to 70% of the current values of the produce under their lock and key.

(iv) The Co-operative Societies have made little progress in the marketing of rice but in Bihar and Orissa the *Grain Golas* have been operating successfully.

Classification, Grading and Standardisation

It is difficult to classify rice on the basis of quality and as such classification rests on the mode of its cultivation, sowing season, or the regions of production. However, major categories are :

- (a) confirmation, *viz.*, fine, medium and bold ;
- (b) raw and par-boiled ;
- (c) machine-milled or hand-pounded.

According to localities *Basmati* of Dehradun ; *Hanraj* of Pilibhit ; *Anji* and *Gaurya* of Naugarh ; *Samhalu* of Fatehpur and *Anjana* of Haldwani are known for quality.

Grading of rice is usually done through mechanical devices or by hand using the sieves or winnowing trays. In the absence of standard grades and innumerable varieties of rice grown in India, sale takes place on the basis of sample which gives an indication of translucency or opacity, colour, polish, admixture, sound or broken grain, etc.

There is no uniform practice for deductions on account of various defects and impurities and it has to be settled on the spot for each contract. Sales on the basis of fair average quality are rarely conducted in internal trade.

Under the Agricultural Produce (Grading and Marketing) Act, 1937, certain specifications have been drawn up according to various quality factors which include : (i) Foreign matter other than rice, (ii) broken rice, (iii) fragments, (iv) damaged or discoloured grains, (v) weeviled grains, (vi) chalky grains, (vii) 1000 kernel weight and (viii) size of grain, *i.e.*, length and breadth.

Storage

The methods of storage in rural areas are always crude, cheap and simple. The receptacles are made of plaited straw, split bamboos, mud, brick work or of wood. These receptacles are made of a platform and are of different capacities suited to the individual requirements. They are in different shapes, rectangular or conical and are known by different names in different parts of the country, *e.g.*, *Parat* in Bombay, Madras, Bengal, M. P. and Behar ; *Kothi* in northern India, *Pattarais* in Madras and *Kanaj* in Mysore.

In the terminal markets the storage facilities are provided by port authorities. The storage receptacles are made of brick work with cemented or flag stone floor of different capacities. The important examples of these are *Kothas* of U. P., *Gadi* and *Dhanyappa Kottus* of Madras. It is interesting to note that the storage improves the quality of rice which makes it easily digestible and fetch better price. It needs about 1½-3 years of storage for rice to mature and be worth consuming. Chemical preservatives or insecticides are rarely used. Some indigenous substances such as ashes, lime powder and bran are certainly used when rice is stored for a year or so.

It has been estimated that there is a great loss of weight in a paddy after the moisture has dried up. Weevil also accounts for heavy loss. About 95,000 to 1,00,000 tons are annually lost on this account alone. Dampness causes further loss, which is estimated at about 10,000 tons of paddy and 10,000 tons of rice. Mice, rats and vermins further account for about 1,10,000 tons annually.

Handling and Transportation

Paddy while on its way from the village to the *hat* is usually handled in bulk, while rice is handled both in bulk and bags. The rice is sent to the market either in village carts which are lined with strong cloth of cotton, hemp or wool and pack animals which carry the produce in saddle bags or it is transported by train or it is transported by boats because it is cheaper than other forms of transport.

Wholesale Distribution

About 89 per cent of the total marketable surplus enters the normal channels of wholesale trade and the rest is distributed by cultivators, landlords, village merchants, itinerant dealers and professional dehuskers. The bulk of the produce is handled by the wholesale merchants, commission agents, and rice mills. The first two possess ample funds, finance distribution and conduct marketing either on their own account or as representatives of others. Rice mills also distribute rice milled by them through their agents. The role of co-operative societies in this direction has been rather insignificant. A few of the societies like Parbati-pur Paddy Sale Society in Bengal, Provincial Co-operative Marketing Society in Madras and Dehra Basmati Rice Producers' Co-operative Marketing Society at Dehradun deserves mention.

The cost of distribution is negligible when rice or paddy is distributed by growers, village merchants directly in the villages. But in the case of wholesale distribution the cost includes handling, cartage charges to station and station expenses, railway freight

or boat hire, handling, cartage, octroi, market charges, godown-rent and charity at the destination.

Cost of wholesale distribution of 51 bags (127½ mds.) of Basmati rice despatched from Amritsar (Punjab) to Hyderabad (Deccan) the value of the goods, at origin being Rs. 826-10-0.

Cost of Distribution of Rice at Amritsar/Hyderabad.

Items	Cost per 51 bags.		
	Rs.	a.	p.
<i>Charges at Amritsar :</i>			
Cost of 102 bags (double bagging less realisation from sale of used bags)	...	14	12 6
Arhat (commission)	...	6	5 0
Dharmada (charity)	...	0	8 0
Postage
Labour (filling and sewing) including cost of twine	...	1	13 6
Cartage to station	...	3	4 0
Miscellaneous charges at Rly. Station	...	1	9 0
Total Expenses at Origin	...	28	4 0
<i>Expenses at Hyderabad :</i>			
Rly. freight @ Rs. 1-12-6 per md.	...	235	1 3
Terminal Tax @ Rs. 1-4-0 per palla of 3 mds.	...	45	8 7
Cartage from station to the local market or gunj	...	4	5 11
Postage, etc.	...	0	4 0
Total Expenses at Destination	...	285	3 9
Grand Total	...	313	7 9
or Rs. 2-7-4 per md.			

Finance is provided by (i) the wholesale merchants and commission agents; (ii) Shroffs—who discount hundis, D/D or bills and advance money on promissory notes or against stocks; and (iii) Banks—provide credit against pledged stocks, but and discount hundies, arrange remittance of money; (iv) co-operative societies.

Retail Marketing

The agencies engaged in the retail marketing of rice are the village *bania*, the cultivator and the consumers' co-operative societies. The margin of profit in this, however, differs a great deal, superior grades of rice securing a greater margin than the inferior ones due to greater competition in the latter. Higher price is available if paddy is sold after conversion in rice. On an

average he gets 8 as. 3 ps. in the rupee paid by the consumer or about 51·5 %.

DEFECTS OF AGRICULTURAL MARKETING

We discuss below the main defects from which the marketing of agricultural suffer in India .—

1. Lack of Organisation

The first thing that strikes the observer is the lack of any kind of collective organisation among the producers. The buyers of agricultural produce specially in the case of money crops, usually operate on a large scale and are organised while the producers are invariably small ryots scattered over a wide area with no common organisation to guide them and to protect their interests, while purchasers of commercial crops on the other hand are large scale operators on an organised basis on the circumstances, it is common to find that the producers of agricultural products as a class are being exploited by the purchasers.

2. Forced Sales

The farmer in general sells his produce at an unfavourable place and at an unfavourable time and usually he gets very unfavourable terms. Place, time and terms these three factors provide us with the clue for an understanding of the existing position.

The nearest place where a farmer sells his produce is his own village. "It has, we think, been established that where the cultivator is in a position to dispose of his produce in a market, however, limited its scope and badly organised its character be, he obtains a much better price for it even when he disposes of it in his own village."¹ The effective price realised by the cultivator is further reduced by malpractices which are as a rule more common in the village than in the market. It is, therefore, important to know the exact nature of these malpractices, the causes of village sales and the relative proportions of sales in village and sales in markets. Let us consider these points in the reverse order.

In the village the produce is sold to the *Sahukar*, *Bania*, landlord, prosperous tenants, *Beoparis* and agents of wholesale merchants. In spite of lack of statistical information it cannot be doubted that village sales occupy a very important place in the marketing especially of food-crops. Mr. Hussain has estimated that 60 per cent of wheat, 35 per cent of cotton and 70 per cent of oilseeds are sold in the village or village markets in the Punjab. For U. P.

¹ Report of the Royal Commission on Agriculture, p. 383.

the respective figures are 80% wheat, 40% cotton and 75% oilseeds. In Bihar, Orissa and Bengal 5% of oilseeds and 90% of the jute is sold in villages.¹ In the U. P. 30% of the wheat grown is sold in the village, in Lyallpur the percentage is 52, while in Attock, district (Punjab) it is as high as 98. As for paddy 89% is sold in the village in Bihar, 72% in Bengal and 89% in Madras. In the case of cotton the village sales amount to 79% in Sind, 81.4 in Khandesh, 51 in Central Gujarat, 80.5 in the Punjab. With regard to the sale of linseed it has been estimated that the all-India average of the percentage taken to the markets for sale by cultivators themselves is only 20% as against 40% sold by landlords and 35% by beoparis.²

Causes of Heavy Village Sales

(i) The most important cause for the high percentage of produce sold in the village is without doubt the indebtedness of the producer. Among cotton growers 71% in North Gujarat, 82 in Middle Gujarat 78% in East Khandesh, and 94 in Sind have to borrow and the percentage of loans taken from the sahuks amounts to 90 in Gujarat 65 in Middle Gujarat, 53 in East Khandesh and 77 in Sind. A cultivator who has to borrow heavily for growing a crop, often mortgages it in advance so that the sale of produce which is hardly more than a mere formality takes almost in his fields as soon as the crop is harvested. In other cases where the crop is not formally pledged it has to be disposed of almost immediately after harvest in order to pay off the debts of the sahuks. The proportion of produce in the markets diminished as cultivators are debt-ridden or carry on subsistence farming in tiny holdings. In Attock district of the Punjab 98.6% of the cultivators dispose of their surplus wheat to local banias who happen to be their sahuks also.³

(ii) The second important factor which is responsible for the high percentage of village sales is the unsatisfactory nature of communication with the nearest market. With bad roads transport costs tend to become heavier. At times the producer has no cattle and carts of his own by which he could transport his produce to the market-place. In sugarcane-growing areas the animals are either engaged in crushing cane just after the winter paddy harvest or in transporting cane to the mills, so that the supply of carts for the transport of other kinds of agricultural produce is very short. In irrigated tracts in the west of Uttar Pradesh, where cotton or fodder crops are sown just after the

¹ Hussain, *Marketing of Agricultural Produce in Northern India*, p. 96.

² National Planning Committee Report on Rural Marketing, p. 42.

³ R. K. Mukerjee, *Economic Problems of Modern India*, Vol. I, p. 299.

harvesting of the Rabi or spring crops, the grower has practically no time to go personally to the market.

(iii) The element of time is an important factor and this for double reason. The marketing possibilities of perishable commodities depend very largely on the rapidity with which they can be transported to the market-place. Communication is, therefore, of the utmost importance in this case. As regards non-perishable commodities the price to be realised by the cultivator depends, among other things, on the time when his produce is marketed. The majority of the Indian cultivators sell their produce within a very short time after the harvest with the result that the market is glutted and the prices go down considerably. According to the Marketing Adviser to the Government of India, there is an all-round depression in prices to the extent of 19% in the case of wheat and 25% in the case of linseed.

(iv) Most of the cultivators are hard-pressed for cash to meet the claims of their creditors and to pay off rent and other charges. Even when they know fully well that by holding up the crop for a few months, they would be able to secure a better net return, they have usually no other alternative but to market the produce immediately in order to meet their urgent liabilities. Cases are by no means rare where a cultivator in direct need for cash, sells his wheat or rice at the height of the season when the prices are very low but is compelled after six months or so to buy perhaps with borrowed money food-grains for his own consumption and even seed for cultivation.

3. Superfluous Middlemen

The majority of farmers dispose of their produce in the village itself. The result is the intervention of most middlemen between the producer and the final consumers of his produce. The agencies in the chain of marketing from the producer to the manufacturer and consumer depend upon the nature of the crop. Paddy usually passes from the village merchant to the mill or to the wholesale dealer in the assembling market and from the mill rice passes on to the wholesale dealer in the consuming market and thence through one or more retailers to the consumer. Between the wholesaler or miller in the producing end and the wholesaler at the consuming end, a host of intermediaries intervene and execute orders on the strength of samples.

In the case of groundnut, the route taken comprises the grower, the village merchant, the broker, the decorticating merchant, the exporter's agent and finally the exporter. Similarly

in the marketing of wheat the agencies that help in the collection of wheat are :—

Marketing of Wheat

Those who bring their own wheat themselves to the market	Those who collect others' produce and bring it to the market
1. Grower	1. Cultivators collecting produce of other growers
2. Landlords	2. Landlords collecting the pro- duce of their tenants
3. Cultivators	3. Village bania
	4. Itinerant dealers
	5. Katcha Arhatiya
	6. Pakka Arhatiya
	7. Co-operative commission shops
	8. Wholesale merchants
	9. Mills and their representative
	10. Exports and their agents.

While the case of potato main channels of assembling are : (i) wholesalers like village merchant or trader or representatives of commission agents who buy potatoes in small lots and arrange for their despatch to the consuming centres ; (ii) wholesalers who are engaged in retail distribution of potatoes in the consuming markets.¹ The agencies engaged in the task of wholesale distribution of tobacco are : growers, professional curers, village merchants and moneylenders ; commission agents and wholesalers ; manufacturers, co-operative societies and exporters. According to Dr. Dantwala, "All those acquainted with the ready cotton trade know that in its transit from a farmer to a ship or a spinning mill not more than three or four transactions are made."² The cultivator of jute disposes of his produce to a *beopari* who has received advance from a *mahajan* or a broker on the understanding that he gets as much as he can for the latter. The *mahajan* in turn sells to big buyer, a baler or another broker by whom

1 S. L. Sharma, *Technique of Marketing in India* 1952 ; pp. 103-4.

2 Dantwala, *Marketing of Raw Cotton*, p. 34.

preliminary sorting, grading and bulking is effected¹ Similarly, in rice the paddy is taken over from the cultivator on threshing floor either by the middlemen acting on behalf of the mills, by speculators or by local traders known as jungle-brokers.²

The existence of a long chain of intermediaries naturally reduces the share of the consumer's price received by the actual cultivator. The marketing surveys initiated by the Government of India reveal that the farmer secures barely eight annas and a quarter out of each rupee paid by the consumer in case of rice and nine annas and three pies in case of wheat.

The following table contains estimated percentages of shares accruing to various agencies for certain important products³ :—

Commodities	Producer's Share	Freight etc.	Misc.	Wholesaler's Margin	Retailer's Margin
Sugar	65.17%	10.71%	9.18%	5.36%	9.58%
Rice	66.80	6.56	17.20	3.19	6.25
Wheat	68.50	19.00	9.3	1.9	3.3
Linseed	79.35	8.4	9.35	1.9	...
Groundnuts	74.70	8.53	16.77	...	...
Tobacco	42.18	6.66	34.46	16.70	...
Potatoes	56.13	11.9	6.8	5.4	18.6
Grapes	26.40	8.95	11.55	...	14.90
Oranges	32.48	16.3	26.54	...	24.68
Coffee	64.77	...	14.07	6.90	9.40
Eggs	...	...	...	...	...
Milk	64.75	...	...	14.75	20.50

It will thus be seen that in marketing the produce the cultivator gets somewhere between 42.3 to 73.7% of the consumer's price and from 26.3 to 57.7% goes to the middlemen.

4. Multiplicity of Market Charges

In the market the cultivator has to arrange with a *kachcha arhatiya* for the sale of his produce and in the larger markets he has to employ a broker or *dalal* to get into contact with the *kachcha arhatia*. For their services he has to pay some commission. In addition to the *arhat* paid to the *arhatiya* and the *dalali* paid to the *dalal*, a number of other charges have to be incurred. *Tulai* has to be paid for the weighing of the produce, *palledari* to cover the cost of the labourers who help in unloading the cart, preparing the produce, filling the scale pans, holding the bag open where the produce is being measured, etc., the seller has also to submit to a deduction known as *garda* for impurities in the produce, and *dalta* for possible loss of weight and *dana* given to sweepers, watermen and even beggars. During the measurement and in

1 C. W. E. Cotton, *Handbook of Commercial Information for India*, p. 146.

2 *Ibid.*, p. 186.

3 M. C. Munshi, *From Farmer to Consumer* (1943), p. 34.

almost all the markets deductions are made from the amount due to the seller for *dharmada* or charity, dispensary, gaushalas, pathshalas.

The following statement gives the costs incurred at the several stages of marketing of bananas grown in Raver Taluka (East Khandesh, Bombay province and transported to Delhi during 1947-48.¹

Description of items	Payments made Rs.	Percentage
1. Price paid to grower	1,600	21.51%
2. Plucking charges	25	.33
3. Cartage from orchard to local railway station	400	5.37
4. Incidental Expenses on tea and tobacco	25	.33
5. Unauthorised railway charges	150	1.98
6. Coolie charges for loading at local station	20	.26
7. Pattiawala	20	2.68
8. Turnwala	1,600	21.51
9. Merchants who send waggon to Delhi	600	8.04
10. Railway freight	570	7.66
11. Coolie charges at Delhi	50	.67
12. Cartage from Delhi station to Delhi fruit market	200	2.68
13. Commission to the agent at Delhi	250	3.3
14. Terminal Tax	75	.99
15. Postage	10	.33
16. Personal expenses of attendant on wagons	25	.33
17. Retailers' Margin	1,637	22.01

The items of cost in the marketing of fruits and vegetables after the produce is harvested and prepared for market which the grower has to bear, according to Marketing of Fruits and Vegetables Committee, Bombay, 1934, are : (i) Cost of packing (including cost of packages, twines and papers); (ii) cost of hauling from farm to the market; (iii) *hamali*; (iv) railway freight; (v) expenses in Bombay—*hamali*, rent charges for weighing balance, rent charges for using the sales ground; *dalali*; contribution to charity fund and postal charged by the commission agent for sending account sales. The grower receives 62.7% of the price paid by the consumer for 100 oranges marketed through the co-operative sale society as against 53.8% of the price when marketed through ordinary trade channels.¹

According to the U. P. Banking Enquiry Committee, the total charges for produce worth Rs. 100 in the important markets of U. P. are : Hapur Rs. 2-9-0; Ghaziabad Rs. 4-3-0; Hathras Rs. 4-13-0; Agra Rs. 5-1-9 and in a country market in Partabgarh it was Rs. 2-13-0.²

¹ S. G. Patil, *Price Spreads in Marketing of Bananas from Raver Taluka to Delhi*, in *Journal of Agri, Ecos*, Vol. IV, No. 1, pp. 37-38.

Price Spread of Wheat

	Sugaon Bombay	Hapur Delhi	Arifwala Delhi	Average
Cultivator's price	04.0	83.0	69.0	68.5
Assembling charges	3.0	1.5	3.0	2.2
Cost at source (f.o.r.)	4.0	4.5	3.0	4.4
Railway freight	22.0	2.5	17.0	17.0
Wholesaler's margin	1.0	3.5	2.0	1.9
Distribution charges at destination.		2.0	2.0	0.8
Expenses at Karachi				0.7
Steamer freights	3.0			1.2
Retailer's margin	3.0	3.0	4.0	3.3
Total	100.0	100.0	100.0	100.0

5. Malpractices in the Market

The great objection to the market charges lies not only in their multiplicity but also in the fact that they are not clearly defined and specified. The charges vary from market to market and there is also no uniform practice as to the charges that are to be borne by the seller and those that are to be borne by the buyer. Even within the same market the *kachcha arhatiyas* may charge lower rates to the village *beoparis* who visit the market oftener and have regular trade connections than to the farmer who visits market only occasionally and has, therefore, only a small volume of business to offer to the *arhatiya*. To make things worse many of the market charges are taken in kind and in taking their share the persons concerned are liable to be generous to themselves. As the Report on the Marketing of Wheat in India points out not only the *arhatiya* and the *dalal*, but the *munim* (*arhatiya's* clerk), the *chaukidar*, the sweeper, the waterman, the *arhatiya's* cook and a horde of beggars of every description all regard themselves as entitled to a share of his produce.¹ He is fortunate if by the end of the day they have only taken two or three rupees, since they are just as likely in some markets to take seven or eight rupees of his precious hundred.

In unregulated markets, malpractices tend to be common. These are :—

(a) Scales and weights are manipulated against the seller. This practice is rendered easier by the fact that there are no standardised weights and measures nor any provisions for regular inspection.

¹ *Co operative Marketing of Agricultural Produce in India*, p. 96.

² *Report of the U. P. Banking Enquiry Committee*, Vol. I. p. 161.

³ *Report*, p. 44.

(b) There are all kinds of arbitrary deductions for religious and charitable purposes and for other objects. The burden falls entirely on the seller and he has no effective means of protest against such practice.

(c) Large quantities are taken away from the produce of the cultivator as *bangi* or sample. According to Royal Commission on Agriculture this amounted to as much as five to eight seers per cart of cotton in Khandesh. The cultivator is not paid for them even when no sale is effected.

(d) Bargains between the agent who acts for the seller and the one who negotiates on behalf of the buyers are made secretly under a cloth so that the seller remains ignorant of what actually takes place.

(e) The broker whom the cultivator employs is more likely to favour the purchaser with whom he comes into contact almost daily than the seller whom he only sees very occasionally. This tendency becomes all the more pronounced when, as it frequently happens, the same works for both parties.

(f) When disputes arise the cultivator has no means of safeguarding his interest. "The enquiries made by the Indian Central Cotton Committee showed that greater use of the markets is not made by cultivators because of the disputes which arise after arbitrary deductions from the weight." Some of the practices obtaining in the market amount to nothing less than common theft.

That the poor agriculturists have to face *great difficulties and expenses* in marketing their produce can be easily brought out by the study of the following figures given by Mr. Mukerjee¹ :—

Place	Fruit	Percentage of sale proceeds received by producers	Percentage of sale proceeds received by middlemen
Poona	Guava	33·6	66·4
Poona	Orange	53·4	46·6
Nagpur	Mosambi	28·6	71·4
Nasik	Papaya	36·9	63·1

6. Lack of Standard Weights and Measures

There is an absurd multiplicity of weights and measures in India. The Royal Commission on Agriculture found that in sixteen markets of the East Khandesh district of the Bombay Presidency, the maund had thirteen different values ranging from

¹ B. B. Mukerjee, *Agricultural Marketing in India*, p. 12.

21½ seers at Bodwad to 80 seers at Pachora.¹ The Indian Cotton Committee pointed out to the Commission that over the greater part of the Bombay cotton was brought and sold on the basis of a *Khandi* of 784 lbs. of lint which was in consequence known as the Bombay *Khandi*. In the south of the Presidency the unit was a bag of 336 lbs. In Khandesh the *Khandi* varied from 160 to 250 lbs. The Madras *Khandi* was only 500 lbs. of lint but in the tract in which 'Western' cotton was grown the unit was the bag of 312 lbs. In M. P. the measures 'Mani', 'Kino' and 'Khandi' have each a different significance in different areas. In Assam, rice is measured by baskets of different sizes. At Kanpur there was a special cotton maund of 50 standard seers that is about 103 lbs. both for lint and kapas. In other parts of U. P. the standard maund of 82-2/7 lbs. was generally used for kapas, lint being sold in bales of 400 lbs. In Hamirpur the seer is of 92 tolas while in Ghaziabad it is of 112 tolas. In Bihar it ranges from 50 to 100 tolas, elsewhere it is of 80 tolas.

The chaotic state of weights and measures in India has been more clearly brought out in all the reports published by the Central Marketing Staff. Weight made of sticks, stones and bits of old iron are a common feature in the markets and villages. A seer may range from 31 tolas to 102 tolas as in the Punjab, a *panseri* (which is five seers) may range from 5 to 9 seers and the maunds may go up to 64 seers as in parts of Bihar and Orissa. Even in the tola normally the weight of one rupee is not always the same.²

This multiplicity of weights and measures employed in India has deplorable effects in several ways. *Firstly*, it affords greater opportunities for cheating the ignorant cultivator and unscrupulous dealers readily avail themselves of such opportunities. *Secondly*, it gives rise to needless complications in practice as between one market and another which is by no means conducive to the interests of trade and commerce. *Thirdly*, for the collection of data on price movements the relative level of prices in different regions, the volume of agricultural production, etc., lack of standard weights and measures is bound to be a great handicap and seriously affects the accuracy of statistical calculation.

7. Absence of Grading and Standardisation of Agricultural Produce

Absence of grading and standardising agricultural produce is another defect. The reputation of Indian agricultural producers in the world's market is low. Even the Export Promotion Committee, 1949 emphasised the poor quality of Indian exports. The Royal Commission on Agriculture investigated into the position of the Indian agricultural products in the world's markets

¹ *Royal Commission on Agriculture*, p. 396.

² *Report on the Marketing of Wheat*, p. 94.

and came to the conclusion that much of the produce was marketed in an unsatisfactory condition. In spite of the work of the Indian Central Cotton Committee adulteration, mixing and damping, particularly the mixing of short with long staple cotton prevailed to an undesirable degree. Bad rating, bad grading and selection and excessive moisture were characteristics of much of the jute exported. The case of hemp was worse still. The position with regard to oilseeds other than groundnuts is a bit satisfactory.

There are no standard grades commonly accepted throughout India even for such important commodities as rice and wheat. In the absence of certain standard grades accepted by the whole trade as the basis for commercial transactions, attempt of individual producers merely secures the ordinary market rate. In fact the present practice of *dara sales*, where in heaps of both good and bad produce are sold together as one lot common in most markets, gives a premium to the inefficient producer as the good produce is made to carry along with it the poor stuff also. The practice of selling ungraded products of mixed quality has naturally reduced the reputation of Indian agricultural produce in the world markets. As pointed out by the Central Banking Enquiry Committee, "The price paid by the consumers in Europe for these product is based very largely on reputation and this reacts unfavourably upon the price received by those cultivators who have improved their quality."¹

8. Defective Preparation and Adulteration for Marketing

But even worse than the defective preparation for marketing is the deliberate practice of adulteration. In the case of commodities such as groundnuts, cotton and tamarind, damping is often resorted to increase their weight. Rice is adulterated with inferior rice imported from abroad, new rice is passed off as old rice and clay balls are mixed with groundnuts. Earth is mixed with wheat. The marketing of Wheat Report found out the following proportions of dirt, oilseeds and non-food grains in wheat :

Punjab	Average %.
East and South-East	1.01
North	1.34
Canal Colonies	1.00
U. P.	
Western	1.28
Central	1.49
Eastern	2.07
M. P.	2.57
Bombay	1.39
Bengal	1.09
Rajasthan	2.54

¹ Report of the Central Banking Enquiry, Committee, p. 208.

² Report of the Marketing of Wheat in India, p. 198.

Barley and other grains are also mixed with wheat. Red wheat is mixed with white. In linseed the impurities may be non-oleginous like wheat, grain and oleginous like oilseeds, rape, custard, etc. One of the most important reasons for such deliberate adulteration of agricultural produce is the high amount of refraction (*khad*) allowed in most markets and the non-mutual terms. In most of the wholesale markets in the producing areas a fixed deduction is made for impurities (say 5%) and the terms are non-mutual, i.e., a producer offering cleaner produce which has only 1% of impurities receives the same price as the producer offering produce containing 5% impurities. Naturally, when this is the case the seller whether he be the middleman or the farmer takes care to see that the produce is adulterated to the maximum limit allowed in the market.

9. Lack of Information regarding Prices

Absence of market intelligence as to prices is another defect. The villagers have practically no contact with the outside world nor are they in touch with the trend of market prices; and they mostly depend on hearsay reports received from the village *bania* who is not at all interested in supplying them the correct information as to prices obtaining in the wholesale market. Even in cases where information as to prices is available prices are not comparable on account of (i) the lack of standard grades acceptable to the whole country, (ii) variation in the amounts of refractions allowed and the terms of standard contracts obtaining in different markets; (iii) inaccuracy of information supplied by various agencies concerned; (iv) variation in the price quotations given by the Local and Central Governments; and (v) the considerable variations in weights and measures used in several markets in the absence of standardisation of weights and measures.

10. Inadequate Storage Facilities

In most of the villages ryots store their produce in pits or receptacles variously known as *kudurus*, *kallis* or *thekkas*. In the upcountry markets produce is stored in *kothis* or *kuthlas* (earthen cylinders) and *khattis*, (pits in ground lined with mud and straw) and in a few centres in *pakka khattis* made of concrete. But that there is a general inadequacy of good storage facilities both in rural and urban areas can hardly be denied. The indigenous methods of storage adopted in the villages as well as in most of the upcountry markets do not adequately protect the produce from dampness, weevils and other vermins such as rats and white-ants. It is estimated that in storage alone India loses about 2 million tons of food-grains every year.¹ The same conditions hold

¹ K. L. Govil, *Agricultural Marketing in India*, 1954 p. 159.

good in case of other products also. According to the Bombay Banking Enquiry Committee, "There is absence of storage facilities for cotton, and the accommodation available in a number of godowns kept by commission agents is insufficient". The same is the case with the storage of jute. The storage capacity of food-grains in the godowns in the possession of the Central Government, is about 65,000 tons, and that of godowns in the possession of the State Governments 1,212,000 tons, and the capacity of the private storage made available to the Government, is roughly equal to that of the godowns constructed by the Government.

The absence of good storage facilities in the villages force the ryot to sell as soon as the harvest is over and thus create a glut in the market.

11. Transportation Means not Well-developed

In India with her vast distances, the existing means of transport are woefully inadequate. "Communications from the field to the village and from village to the *mandi* are often extremely poor and defective. Bad roads, lanes and tracts connecting villages with the markets not only add to the cost of transportation and aggravate the strain on bullocks and other pack animals, but also lead to the multiplication of small dealers and intermediaries. They also restrict market by hindering cheap and rapid movement of agricultural produce"¹ In the construction of the railways in India administrative and strategic considerations seem to have had more weight than the provision of marketing facilities to the ryot by linking up the producing areas with markets by a good system of feeder lines. The freight policy followed by the railways also has given rise to considerable dissatisfaction. Railways in India do not afford the maximum possible facilities for the quick and safe transport of perishable products such as fruits, vegetables and dairy products. This naturally restricts the markets for such produce and reduces the incentive for intensive cultivation.

The position with regard to road mileage in India is very unsatisfactory. There are 0.22 miles of road per sq. mile as against 3.0 in Japan, 2.02 in Britain, 1.84 in France; 0.95 in Germany and 1.03 miles in U. S. A.² There is also a lack of feeder roads connecting villages to market towns and the nearest railway stations, so that produce cannot be advantageously transported to the mandis.

12. Lack of Financial Facilities at Cheaper Rates

The cultivator is financed by the village *sowcar-cum-trader* who is in his own turn financed by *adatyas* and the indigenous

1 R. K. Mukerjee, *Op. Cit.*, p. 295.

2 *Eastern Economist*, Annual, 1952, p. 1064.

banker. In the absence of warehouses and the lack of facilities for making advances against the security of warehouse receipts there cannot be any system of cheap finance against security of goods. There is at present no proper link between indigenous Bankers or Commercial Bankers and the Reserve Bank of India. The various marketing agents borrow funds at a high rate of interest. This naturally leads to a rise in the cost of marketing with the ultimate result that the share of the price received by the producer is correspondingly reduced.

CHAPTER 22

AGRICULTURAL MARKETING IN INDIA—(contd.)

Lines of Improvement

If the agriculturist in India is to secure a higher price for his produce, if the needs and preferences of the consumer are to be conveyed to the producer with the minimum amount of delay and friction and if the large-scale industries are to secure steady and reliable supplies of raw materials of uniform quality, obviously the defects in the machinery for marketing of agricultural produce mentioned in the previous chapter should be remedied as quickly as possible. In fact, an improved system of agricultural marketing which will secure for the cultivator a larger proportion of consumer's price is a *sine qua non* for agricultural improvement in India.

The Royal Commission on Agriculture recommended and the Provincial and Central Banking Enquiry Committees endorsed the following measures for improving and organising agricultural marketing :—

- (i) Improvement of transport facilities including rural communications,
- (ii) Lowering of railway freight rates and grant of other railway facilities,
- (iii) Establishment of Regulated Markets under State legislation,
- (iv) Standardisation of Weights and Measures,
- (v) Adoption of measures to secure improved quality of produce by organisation among buyers and traders to guard against adulteration,
- (vi) Fixation of standards and grades of commodities,
- (vii) Promotion of Co-operative Sales,
- (viii) Holding of auction sales by Agricultural Departments to ensure increased prices to the cultivators who produce improved varieties.
- (ix) Carrying out of Market Surveys, and
- (x) Appointment of expert marketing officers on the staff of the Agricultural Departments.

The line of improvement may be discussed in the following order :—

I. Establishment of Regulated Markets

Most of the defects and malpractices to the disadvantage of the producer-seller can be removed by the exercise of proper control over markets and this could be done by the establishment of 'Regulated Markets' in the country. Markets may be regulated either by Local Bodies or under State legislation. The latter is decidedly better because of uniformity of marketing processes for the whole State.

The chief advantages of regulated markets are :—

(i) Market charges are clearly defined and specified ; excessive charges are reduced and unwarranted ones are prohibited ; (ii) market practices are regulated ; (iii) correct weightment is ensured by periodical inspection and verification of scales and weights ; (iv) suitable arrangements for the settlement of disputes regarding quality, weightment and deductions, prevent litigation, safeguard the interest of the seller and smoothen business ; (v) reliable and upto-date market news are made available to the users of the market ; (vi) suitable quality standards and standard terms for buying and selling are conveniently enforced ; (vii) reliable statistics of arrivals, stocks, prices are maintained ; (viii) facilities like sheds for the sale of produce, space for parking carts, water cisterns for cattle and, storage accommodation for agricultural produce are provided ; (ix) propaganda for agricultural improvement is more conveniently undertaken.

An attempt is made in these regulated markets to protect the cultivator-seller from unauthorised deductions, unduly low quotations and false weightments and to secure impartial arbitration in cases of dispute between the seller and the buyer. With a view to achieving these objects in each of the regulated markets, Market Committees have been established containing representatives of growers, traders and local bodies. All business and transaction between the grower and the buyer within the market area have to be conducted under the rules and laws framed and administered by the Market Committee. The charges and the allowances that can be levied are prescribed by the Market Committee and any one charging more is likely to have his licence cancelled. In such markets, again, the use of unauthorised weights and measures is prohibited and all weighing has to be done by licensed weightment. Dealers in the regulated markets are required to fix prices in public and keep accounts or returns in such a way as to facilitate their submission to the Market Committee at regular intervals. Disputes between the seller and the buyer arising within the area of a regulated market have again to be submitted to arbitration by the disputes sub-committee. This makes impossible the unilateral repudiation of contracts or the going back upon the original agreement so common in the unregulated markets. \/

The first attempt at regulation of markets in India dates back to 1897 when the Berar Cotton and Grains Market was passed to purge marketing of many of its abuses. The law provided for the notification of markets and *bazzars* and their control by representative committees. This Act was applicable not only to grain markets but also to cotton markets. The next attempt at regulation of marketing was made in Bombay by passing the Bombay Cotton Market Act of 1927, under which the Government, can notify cotton markets and appoint committees to manage them. Only authorised weights and scales can be used and damping of cotton and admixture of sand are discouraged. No cotton market can be established within prescribed distances of regulated markets. Since then both the above Acts have been repealed and substituted by new Acts. The Central Provinces Cotton Market Act, 1932 and as amended by Act of 1937 replaced the legislation of 1897. The Bombay Act was replaced by the Bombay Agricultural Produce Market Act of 1939, in respect of all agricultural produce. Similar Acts were passed in Madras, the Punjab, Hyderabad, Baroda and Mysore.

At the outset of World War II Madras had 16 regulated markets; M. P. 39; Bombay 7; Hyderabad 22; Gwalior 36 and Baroda 2—totalling 122 regulated markets in all. In the post-war period most rapid expansion has taken place in Bombay and Hyderabad. The number of regulated markets in the country increased from 122 in 1939 to 283 in 1950-51 to 356 in 1953-54 to 414 in 1954-55 and 450 in 1955-56. They are now well established in M. B. (46), M. P. (36 cotton and 15 grains); Madras and of Alld (26); Punjab (62) Hyderabad (70); Mysore (7) and Bombay (120 major and 90 minor markets). Regulated markets do not exist in U. P., Bengal, Bihar and Orissa. In M. P. Cotton is regulated in Amraoti; South Cotton is regulated in Tirupur, Nandiyal, Adoni, Tirunelveli; groundnuts in South Arcot and Coimbatore; tobacco in Guntur, West Godavari and Coimbatore; arecanuts, cocoanuts, turmeric, potatoes elsewhere.¹

To make regulated markets more efficient the Government Report, 1943, recommended the following measures² :—

- (i) The application of the Act should be extended to all important commodities dealt within a particular market;
- (ii) Producers should be adequately and properly represented on the market committees;
- (iii) The sale and produce of agricultural produce within the market yard should be insisted upon;

1 *Times of India's Directory and Year Book*, 1955-56, p. 91.

2 *Report on Fairs, Markets and Produce Exchanges in India*, 1943.

(iv) In every State, a Government Department, should be made directly responsible for taking the initiative in the establishment of such markets ;

(v) The Superintendent and the *Daroga* of the Market Committee shall not be liable to dismissal or discharge by the Market Committee ;

(vi) The Superintendent should possess the necessary technical knowledge ;

(vii) The Act should be enforced only after the more reasonable section of market functionaries and traders have been convinced of the general utility of regulation ;

An Advisory Service for regulated markets has recently been constituted in the Central Directorate to co-ordinate the experience of various States, promote the regulation of markets in States where there this has not yet been done and to effect improvements in the working of regulated markets on a uniform basis.)'

Recommendations of Conference on Marketing and Co-operation (1956)

In order to accelerate the progress in enacting market legislation and the regulation of markets thereunder, the Conference has recommended the following measures :

(1) Expeditionary steps should be taken by all the States to pass necessary legislation in regard to regulation of markets, and in doing so, they may profit by the experience of other States where such legislation is in force.

(2) The objective should be able to cover all important market centres by the end of the Second Five Year Plan, and a phased programme should be prepared in this regard by the States.

(3) The State Governments should send their officers who are to be entrusted with the administration of the "Agricultural Produce Markets" Act, to States which have made some progress in this regard, for studying the patterns of regulation and adopting them with such modifications as may be necessary according to local conditions.

(4) Adequate representation to co-operative organizations working in that area should be given on the Regulated Market Committees.

(5) With a view to developing the resources of the market committees and thereby augmenting their funds necessary for improving markets, the States may consider levying of market

cess by the market committees on an *ad valorem* basis and make suitable provision in their State Acts.

(6) In market centres where the municipalities and the local bodies are recovering octroi and toll taxes on agricultural produce must earmark a reasonable percentage of income derived from these taxes for the development of market yards and provision of amenities therein.

(7) The Central Government should provide funds to the States for the purpose of advancing loans to the Market Committees for capital expenditure on easy terms.

(8) Financial assistance contributed by the Central and State Governments may be given in the form of subsidies in the initial stages of the new market committees for managerial expenses. The State must also explore possibilities of augmenting the financial resources of these market committees from other sources.

II. Standardisation of Weights and Measures

Standardisation means establishment of certain standard based upon intrinsic physical properties or qualities of any commodities with a view to further sub-dividing it into several grades and classes. One of the objects of standardization of weights and measures is to safeguard the interests of the parties to a transaction against cheating by false or under-weight. The need for the standardization of weights and measures is more urgent in rural areas in regard to transactions in which farmer is concerned.

The use of standard weights and measures had been enjoined not only by the Central Government but also by the Provincial Governments and prescribed by Municipalities and Local Board. In March 1939, Standards of Weights Act was passed by the Government of India according to which the following weights have been adopted as standard weights :—

- (i) Standard tola—180 standard grams.
- (ii) Standard seer—80 tolas or 14,400 standard grains.
- (iii) Standard maund—40 standard seers.
- (iv) Standard pound—7,000 standard grains.
- (v) Standard ounce—1/16 of a standard pound.
- (vi) Standard hundred—weight—112 standard pounds.
- (vii) Standard ton—2,240 standard pounds.

The seer thus weights 2·057 lbs. and the maund is, equivalent to 82·28 lbs.

Accordingly various States Governments have also passed Standard Weights and Measures Act, *e.g.*, M. P. in 1928 ; Bombay in 1932 ; Punjab 1941 ; Orissa 1943 ; Bihar 1947 ; U. P. 1947 and Madras 1948.

In 1950, the Indian Standards Institution appointed a Special Committee on weights and measures. It suggested in 1951, statutory introduction of the metric system. It suggested a 15 year period of transit, after which no other system should be legally recognised.

III. Grading of Agricultural Produce

The quality of the agricultural products of India can be improved, their reputation in the world markets enhanced and export trade strengthened, dealings between buyers and sellers in distant markets facilitated and a better return ensured to the grower of the better quality produce if arrangements can be made and enforced for the better grading of agricultural products. In fact the urgency of the need for evolving uniform and universally accepted standards of quality at least with regard to India's agricultural staples was brought very clearly to the limelight by the various Marketing Surveys undertaken in the country. These surveys revealed that if the quality of the Indian agricultural produce was to improve standard grades of quality should be evolved with the appropriate grade designation and trade mark for each variety and all produce brought for sale should be graded and all trade conducted on the basis of these standard grades. With this end in view the Agricultural Produce (Grading and Marketing) Act was passed in 1937 defining standards of quality, fixing grade designations to indicate quality and prescribing grade designation marks with regard to scheduled agricultural products.

The Act of 1937 was amended in 1943 to widen its scope to include additional products. Thus the Act now includes fruit, vegetables, hides and skins, dairy produce, tobacco, coffee, fruit products, *atta*, oilseeds, vegetable oils, cotton, rice, lac, wheat, sann hemp, jaggery, myrobolans, *bura*, wool, and goat hair, resin, bristles, turpentine and arecanuts. With regard to these commodities specific grading and marketing rules are framed and the Agricultural Marketing Adviser to the Central Government has been empowered to issue certificates of authorization to packers who are prepared to grade and pack the produce on the prescribed lines. The certificates are issued to the primary producers or individual large packers. The Inspecting Staff of the C. A. M. Department inspect the grading stations in charge of the authorised packers and collect samples of graded produce from the market. They are examined and analysed to see if they confirm to the standards of quality laid down by the Central Quality

Control Laboratory at Nagpur. Exports of notified commodities such as tobacco, sann, hemp, wool and bristles are prohibited unless they have been graded and marked in accordance with the prescribed 'Agmark' standards. These so far have been notified for 110 items, and preliminaries for notifying 30 more items were completed during 1954-55.¹

Grading of agricultural products has made good progress. In 1948, the produce to the extent of Rs. 11.9 crores was graded, since then amount has increased to Rs. 12.3 crores in 1949; Rs. 14 crores in 1950; Rs. 13 crores in 1951; Rs. 18 crores in 1952 and Rs. 14 crores in 1953.²

The progress of grading of agricultural commodities is given below³ :—

(i) *Cotton* : The grading of cotton is being done in Bombay and M. P.

(ii) *Fruits* : The grading of fruits is being done in Bombay, M. P., Madras, and Punjab.

(iii) *Edible oils* : in case of mustard oil in U. P., Bihar and Punjab.

(iv) *Butter* : is being graded in Bombay only.

(v) *Gur* : is being graded in Bihar only.

(vi) *Potato* : is being graded in Dehradun, Simla and Kalka markets. In Dehradun potatoes over 1" are called 'Phool' those between $\frac{1}{2}$ " to 1" as *Gud* and less than " as *charri*. At Mettupalaiyam they are graded into several varieties meant for special markets, e.g., *Round* to Bombay and Colombo; *Large Kidney* to Calcutta, *Medium* for Madras; *Skinned off* for Calicut and *Podis* for local consumption.

The following table shows the value of quantity graded⁴ :—

Commodity Grade	No. of Packers	Estimated value (In Lakhs of Rs.)
Ghee	95	262.70
Butter	2	34.09
Edible oils	29	74.65
Eggs	30	3.47
Tobacco	293	499.64
Cotton	17	79.18
Sann Hemp	43	116.23
Fruits	98	2.58

¹ *India*, 1956, p. 154.

² *India*, 1955, p. 180.

³ K. R. Kulkarni, *Op. Cit.*, p. 450.

⁴ *Indian Year Book*, 1949-50.

Grading and inspection service for agricultural commodities is an essential adjunct to the development of co-operative marketing, processing and warehousing. Hence, the States should prepare a three-year phased programme for organising, grading and inspection service and financial assistance to be given by the centre for implementing these schemes.

Secondly, the services of the trained graders in warehouses at whichever centres available may be utilised by the co-operatives as well as the regulated markets.

Thirdly, in promoting grading of agricultural commodities, priority should be given to those which will be warehoused.

Fourthly, raw jute should be brought under the purview of the Agricultural Produce (Grading and Marketing) Act of 1937, and grade standards therefore laid down.

Fifthly, steps should be taken by the State Governments for training the staff required for grading work and the Central Government should provide facilities for such training in the regional laboratories that are being set up under the Second Five Year Plan by the Directorate of Marketing and Inspection. For this purpose the possibility of the utilisation of agricultural schools and colleges for importing such training should also be explored.

IV. Standardisation of Contracts

With a view to securing improvement in quality of agricultural produce, eliminating trade disputes and smoothening the operation of trade between distant markets steps should be taken (i) to prescribe standard contracts on an all-India basis for important staple commodities, (ii) to enforce the use of standard contract terms by legislation, if it is not found feasible to secure a general acceptance of all-India standard contracts on a voluntary basis and (iii) to secure the adoption of Indian standard contract terms for the export trade.

The most important object of standard contracts as drawn up by the Central Marketing Deptt., is to obtain a premium for producers of good quality through a mutual or reciprocal scale for produce higher or lower than the basis. At the same time such contracts serve to check the present tendency of putting produce containing excessive dirt on the market as only a small amount of refraction is allowed on the basis laid down in the standard contract. Standard contract terms have been prescribed for wheat, linseed and groundnuts vegetable oils.

V. Provision of Marketing News

The Agricultural Commission had recommended that steps should be taken for a better dissemination of the marketing news. The marketing surveys conducted under the direction of the Central Marketing Staff have shown that "there is at present a surprising lack of co-ordination as between different markets. Prices do not move in harmony even in markets which are not far from each other. We often find a market glutted with a produce which is scarce in another perhaps only a few miles off."

At present there are two broadcasts from Calcutta, one in Bengali and the other in English, given in the afternoons and evenings. Information is supplied on stock exchange prices, prices of jute and cotton from Bombay. At Bombay daily broadcasts give the Liverpool and Bombay cotton rates as well as the Bombay prices of bullions, wheat, linseed, castorseed, groundnuts and the closing stock exchange quotations. From Delhi, the ready and future programme in the evenings include the broadcast of prices of cereals, the ready and future prices of wheat, gram and barley at Hapur as supplied by the office of the Agricultural Marketing Adviser, live-stock prices derived from the same source, quotations for gold and silver as well as for vegetables. Arrangements have been made with the Indian Central Cotton Committee to broadcast cotton prices for selected markets in the Madhya Pradesh. In addition a weekly market report in English and Hindustani is broadcast every Sunday issued at the same time to over 100 newspapers.

The most important function of the Marketing Department of the Government of India is the dissemination of reliable and upto-date information and market intelligence. Except in Punjab, Madras, Bihar and Mysore, where a fairly good market intelligence is run the other States have either no arrangements or have inadequate arrangements. The Directorate of Marketing and Inspection had arranged for the broadcast of (i) the daily market rates of a number of commodities at Hapur market, (ii) a weekly market report dealing with the fluctuations in important commodities like wheat, rice, oilseeds, pulses and several graded articles at various centres in India, (iii) issue of a monthly bulletin "Agricultural Situation in India."

Efforts are made to keep the public informed of the activities of the Directorate through newspapers, exhibition of special posters at railway stations and other suitable public places and by putting up demonstration stalls at various agricultural and industrial exhibitions in the States. In these exhibitions public demonstrations are given of the technique of grading by exhibiting illustrative maps, diagrams, and charts relating to the production,

supplies and prices and by sale of the actual graded commodities. The Second Plan provides for the setting up of an all-India Market News Service mainly for farmers.

VI. Provision of Warehousing Facilities

Warehousing facilities are contemplated not in order to put a premium on speculative holding of crop which might result in an ultimate loss but to enable the cultivator to hold his crop when he knows for certain that thereby he would raise his income by a clear margin. What are warehousing facilities for cash crops are cold storage depots for perishables. The traffic in fruits, vegetables and fish can never be sufficiently developed unless railways provide refrigerator or cold storage vans supplemented by cold storage depots at suitable centres. At present, cold storage depots exist only on a very small scale in places like Bombay and Calcutta. In all countries such depots play an indispensable part in the marketing of fruits, vegetables and fish; and private enterprise for running such depots has proved highly profitable. The case for establishing such depots is all the stronger in a tropical country like India.

In Western countries warehouses or godowns are often built by private enterprise and run for profit. In the United States such warehouses are established within the market premises. They are all licensed and are independent of buyer and seller. Such warehouses should also be started on these lines in India. Railway Companies, as recommended by the Indian Central Banking Enquiry Committee, should provide godown facilities in suitable places. In all regulated markets it should be one of the main tasks of the Market Committee to provide godown facilities. The Marketing Sub-Committee of the Policy Committee on Agriculture, Forestry and Fisheries suggested that the construction of cheap concrete bins for domestic storage should be demonstrated in rural areas and grains elevators should be introduced on a large scale in all terminal and important secondary markets. „

In November 1954, a Storage Directorate was set up with the following functions :

(a) A survey of existing storage facilities and advice on conservation, adaptation or improvement of existing building for storage purposes, (b) Dissemination of scientific advice on scientific methods of storage and grain handling, (c) Preparation of detailed schemes for construction of extra storage accommodation in areas where the existing storage is adequate, (d) Training courses for Provincial and State officials entrusted with the responsibility for storage, (e) Liaison with trade to include modern scientific methods of conservation, (f) Research.

On the basis of the results of a general survey, the Government evolved a five-fold storage programme : (1) to increase storage accommodation at all rail heads and consuming centres ; (2) to establish reserves in producing areas for long storage ; (3) to set up officially controlled Inspection Agencies and Analysis Laboratories ; (4) to encourage by all possible means the construction of godowns by private agencies ; and (5) to inculcate among the producers the main principles of hygienic conservation of food-grains. Accordingly storage godowns have been constructed at Bombay, Vishakhapatnam and Coimbatore. "

The Agricultural Finance Sub-Committee said of warehousing "Warehousing might be considered as extensions of the system of transport and the planning of the location of warehouses must be done as part of planning the extension and improvement of transport facilities. The construction of a chain of warehouses is unlikely to attract immediately sufficient private capital. Hence, we recommend that the State should itself undertake the planning and construction of warehouses at all nuclear points of trade in agricultural produce. The warehouse system should be operated by a Public Corporation organized on lines similar to those of the "Improvement Trusts or Post Trusts." The Rural Banking Enquiry Committee also emphasized the importance of storage and warehousing in relation to rural credit and rural banking. It suggested the formation of a Warehousing Development Board with a large capital for the purpose of giving loans and subsidies to those who were prepared to take up this line of activity as a business. But in the absence of a detailed scheme whereby execution and implementation could be secured, no progress has been made in pursuance of this recommendation.

The Reserve Bank of India in a circular letter addressed to all State Governments in November 1944 urged the passing of a Warehouse Act. Seven of the State Governments—Bombay, Bihar, Hyderabad, Madras, M. P., Mysore and Kerala Travancore-Cochin have passed Warehouse Acts on the lines suggested in a Draft Warehouse Bill circulated by the Reserve Bank to all State Governments. However, no licensed warehouses have so far been established except Bombay and M. P.

(1) Most recently the Committee of Direction of the All-India Rural Credit Survey investigated thoroughly the question of establishment of warehouses and recommended the establishment of National Co-operative Development and Warehousing Board and an All-India Warehousing Corporation by a statute. After discussing the recommendations at various levels, Government of India accepted these recommendations and passed the Agricultural Produce Development and Warehousing Corporations Act, 1956.

The Act has been brought into force from 1st August 1956. Salient features of this Act are :—

1. The establishment of the National Co-operative Development and Warehousing Board. This Board is a body corporate with a power to acquire, build and dispose of property to contract, to sue and to be sued.

2. The Board consists of ten members representing Central Government, the Chairman of the Forward Markets Commission, one representative of the Reserve Bank, one of the State Bank, and nine non-official members nominated by the Central Government.

3. The functions of the Board are to plan and promote programmes for agricultural production, processing, marketing and storage, warehousing, exports and imports of agricultural produce through a Co-operative Society or Warehousing Corporation.

4. The Central Government after due appropriation made by the Parliament by law in this behalf pays to the Board a non-recurring grant of Rs. 5 crores and a recurring grant in each year of a sum of Rs. 5 crores during the period of 5 years from the commencement of this Act. After the expiry of the said period of 5 years, Government may give such amount from time to time as it seems necessary to enable the Board to perform its functions under the Act.

5. The Board has to maintain two Funds—(i) the National Co-operative Development Fund and (ii) the National Warehousing Development Fund. The first Fund is to be utilised for making long-term loans to State Government to enable them to subscribe to the share capital of co-operative societies ; and to give non-recurring or recurring subsidies to State Governments or through them to co-operative societies. The second Fund is to be utilised for subscribing to the share capital of the All-India Warehousing Corporation ; and to make loans to a State Government for the purpose of its subscribing to the share capital of the State Warehousing Company pertaining to its State.

6. Establishment of a Central Warehousing Corporation with its head office at New Delhi by the Central Government. Its authorised share capital should be Rs. 20 crores. It should be contributed by the Board, the State Bank, other Scheduled Banks and Co-operative Societies, Insurance Cos., and recognised associations. The shares of the Corporation are to be guaranteed by the Central Government as to the repayment of the principal and the payment of actual dividend. The management of the Central Warehousing Corporation vests in the Board of Directors.

7. The functions of the Central Warehousing Corporation are : (a) to acquire and build godowns and warehouses at such suitable places in India as it thinks fit ; (b) to run warehouses for storage of agricultural produce, seeds, manures, fertilisers, and agricultural implements offered by individuals, Co-operative Societies and other institutions ; (c) to act as agent of the Board or of the Government for the purposes of purchase, sale, storage and distribution of agricultural produce, seeds, manures, fertilisers and agricultural implements ; (d) to arrange for facilities for the transport of agricultural produce to and from warehouses ; and (e) to subscribe to the share capital of the State Warehousing Corporation.

8. (1) The State Government is empowered to establish its own warehousing corporation, with the approval of the Central Warehousing Corporation.

(2) The share capital of the State Warehousing Corporation shall be such sum not exceeding 2 crores of rupees. This capital is to be contributed by the State Warehousing Corporation and the State Government in equal proportion.

(3) The management of the State Warehousing Corporation vests in the nominated Board.

9. The main functions of the State Warehousing Company include (i) to the acquiring and building of godowns at places other than those earmarked for the All-India Warehousing Corporation ; (ii) running of licensed warehouses ; (iii) managing regulated markets at centres to which the Company's activities have been extended ; (iv) doing distribution work as the agent of the Central Government, State Government or All-India Warehousing Corporation ; (v) and subscribing to the share capital of co-operative societies concerned with storage or warehousing as their primary function or as one of their primary functions.

10. While a State Warehousing Company would ordinarily aim at having its own godowns and warehouses upto the district and sub-divisional levels, co-operative warehouses should be established in the smaller towns and taluka head-quarters and at other important marketing centres in the semi-urban and rural areas. This programme can then be linked up to the bigger village by encouraging co-operatives in such villages to build godowns, seed-stores, etc., in exercise of their multipurpose functions.

The State has to enact its Warehousing Act to encourage establishment of independent warehouses and to make provision for their proper supervision and control.

Warehousing Programme under the Second Plan

Under the Second Plan the programme is as under :

(i) Establishment of 100 warehouses each having a storage accommodation of 10,000 to 20,000 tons or more ;

(ii) Establishment of warehouses in 250 important trading centres by the State Warehousing Corporations, with a capacity ranging from 1,000 to 10,000 tons ;

(iii) Construction of 1,550 godowns for marketing societies and 4,019 godowns for large-sized societies. The godowns of the large-sized societies will be used not only for supplying seeds, fertilisers and other articles required for agricultural production, but also for sorting the produce of cultivators ;

(iv) The total storage capacity of existing godowns and warehouses run by the co-operative societies and those proposed to be constructed under the plan would be of the order of about 4 million tons.

At the village level the large-sized credit society will construct a godown estimated to cost between Rs. 10,000 to Rs. 15,000. 25 per cent of the cost of this godown will be given as subsidy to be shared equally between the Central and the State Governments. Out of the remaining, which will be given as loan—62½% will be lent by the Central Government and 12½% by the State Government.

At the *mandi* level, each primary marketing society will have a godown of its own. This godown will be larger than the one constructed by the credit society. Its cost will be between Rs. 20,000 to Rs. 60,000. The cost of the godown will be subsidized to the extent of 25% on the basis of equal sharing by the Central and the State Governments. The remaining 75% will be given as a loan to the society.

Causes of Slow Progress of Warehousing in India

In countries like the U. S. A. and Canada, warehousing has made a great progress but in India various problems have hindered such progress. The main causes are :—

1. Unlike American and Canadian farmers, our farmers are small-holders and hence the marketable surplus is obviously very small. Hence, it may not be worthwhile for them to hand over their produce to the Warehousemen. The farmers can avail of the benefits of warehousing only if the co-operative marketing is developed and credit is linked up with marketing effectively, so

that small quantities of agricultural produce of scattered agriculturists can be collected, pooled and deposited in the warehouses.

2. Occasional failure of crops and occurrence of natural calamities often damage the crops, so that little is left for the market.

3. Agricultural commodities when compared to industrial products cannot last long both in quality and quantity. Durables may take time for their deterioration but each commodity has its peculiar characteristic, *e. g.* chillies lose weight with lapse of time ; groundnuts get wet in monsoon and deteriorate in quality ; cotton and gur after lapse of certain time fetch relatively less price. Hence, if the crop is to fetch best prices, it is necessary that they should be stored in good warehouses and disposed of in time. Secondly, perishables quickly deteriorate and lose the benefits of good prices. They require cold storage facilities specially in consuming centres, which facilities are fully lacking in the country.

4. Cost of warehousing includes rent, handling charges, interest, deterioration, waste, drainge, insurance charges. If the cost of warehousing is higher than the rise in price, and is not commensurate with the troubles taken by the peasants, they will not be tempted to deposit their produce in warehouses. Hence, the cost of warehousing should be very low.

5. For successful working of warehouses, stability in agricultural prices is necessary, but in India prices of foodgrains normally rise after marketing season is over but sometimes the prices go down if early monsoons are good and timely as the produce rush to unhoard their stock for sale.

6. Warehousing receipts are papers having no intrinsic value unless the lenders are sure that they are backed by tangible assets lying in the warehouses. They will not advance their funds against warehouse receipts which are of doubtful nature. Hence, the management of warehouses should be so efficient as to ensure the confidence of the lenders. Secondly, the warehouse receipts should have an unrestricted negotiability. The 'holder in due course' of this receipt should receive the value of the instrument.

7. Agricultural commodities are heterogeneous. Grading is most essential for the successful working of the warehouses ; and grading is a necessary condition for bulk storage. In order to facilitate grading, grade specifications as for Fair Average Qualities of different commodities need to be fixed.

8. Irregularities in transporting the produce from warehousing to the consuming centres create glut and scarcity in the market,

so transport arrangements by rail and road should be made well in advance and in an orderly manner.

9. Trained and efficient personnel is also most essential.

Suggestions for Future Improvement

The Conference on Marketing and Co-operation held at Jaipur in February 1956, recommended the following measures for improving warehousing facilities :—

1. In order that the interests of the rural producer are kept in mind as the main objective in formulating the storage and warehousing programme as a whole, the selection of centres at which godowns and warehouses are to be established should be governed by the following principles :

(i) There should be sizeable quantities of surplus produce for sale.

(ii) There should be a need for storage facilities in the locality.

(iii) The place should be closed to a terminal market ; due regard should be paid to the availability of transport facilities, by rail, road or water.

(iv) There should be nucleus of co-operative marketing organisation and possibilities of their further expansion in or around the proposed warehousing centres.

(v) There should be existing or potential banking facilities in order that loans could be advanced against the produce in godowns or on warehouse receipts.

2. Since the object of warehousing is to prevent distress selling and to secure fair prices to the producers, the bulk of the warehousing programme should be undertaken in the areas of concentrated production. Some warehouses may be located in centres of export or heavy consumption.

3. The State Government should furnish to the Central Government a list of principal agricultural commodities in each region in respect of which warehousing facilities are considered necessary, keeping in mind the phased programme of the development of warehouses and the priorities for the warehousing of these commodities.

4. In order to expedite the construction of new warehouses, proceedings for the acquisition of land should be instituted under the emergency provisions of Land Acquisition Acts and by the

appointment of Land Acquisition officers with the Warehousing Corporations.

5. The State Governments should assess the phased requirements of the essential building materials in short supply for the purpose of construction of warehouses and intimate to the Central Government in the Ministry of Food and Agriculture who should arrange for the highest possible priority for these demands.

6. As the godowns are being built in the interest of the primary producers, he should be helped to derive the benefits of storage and warehousing to the fullest possible extent by according concessional charges to co-operative societies.

7. With a view to making the warehouses popular and promoting the negotiability of warehouse receipts, there should be a local Advisory Committee for each warehouse, where the interests concerned should get due representation.

8. The warehousing proposed to be established under the Second Five Year Plan, may be of the following categories: (i) above 20,000 tons capacity; (ii) between 10,000 and 20,000 tons; (iii) between 5,000 and 10,000 tons; (iv) between 2,000 and 5,000 tons; and (v) between 1,000 and 2,000 tons.

The warehouses in the first two categories may be established by the Central Warehousing Corporation and the others by the State Warehousing Corporations.

The Second Conference of State Ministers or Co-operation held at Mussoorie from 1st to 3rd July 1956, has made the following recommendations :—

(i) Very early steps should be taken by every State Government to set up the State Warehousing Corporations under the Agricultural Produce (Development and Warehousing) Corporations Act, 1956.

(ii) The Central Warehousing Corporation should also be set up immediately by the Central Government and 22 warehouses at the places referred to in Appendix III be established by the C. W. C. soon.

(iii) The State where such legislation has not already been enacted should immediately enact necessary legislation on the lines of the model Bill already circulated by the Government of India for the licensing of warehouses order to make the warehouseman's receipt a negotiable instrument.

VII. Provision of Better Transport Facilities

As an inseparable adjunct to proper marketing adequate and appropriate transport facilities are indispensable. If the national economy is to be properly developed from all angles and to safeguard equally the interests of all sections of the community the available transport facilities of every kind will have to be very much improved and expanded. Even the principle of charging transport dues on the country's produce needs to be radically reconsidered from the standpoint just mentioned. The several means of transport, ancient as well as modern, will have to be all co-ordinated and integrated *inter se so as to form a single integral whole* and work as a real public utility service for the country collectively.

The State Governments should (i) give the highest possible priority for the construction of all-weather feeder roads in agricultural areas for facilitating the movement of agricultural produce to assembling markets or despatching stations and (ii) popularise and assist in the use of pneumatic tyres for bullock-carts and to assist in the manufacture and utilization of country carts for transporting agricultural produce. The rail transport and steamship authorities should also (i) introduce a unified rates policy for different classes of goods for the whole country and (ii) provide adequate number of ventilated wagons and refrigerated transport for perishable products like fruits, vegetables, eggs, fish, milk and butter. Good metalled roads linking the village to the market town will reduce the cost of transport and the strain on the cultivator's livestock and make it easier for the grower directly to market his produce in the town thus eliminating middlemen. The railways by charging low freights for the transport of perishable products such as fruits and vegetables and by providing faster services can make available to the producer an expanding market. As the Committee on Co-operation in Madras have pointed out, "Railway rates should be studied by the marketing staff from time to time with reference to trade conditions and movements of different kinds of produce and the need for regulating or reducing the freight rates should be periodically and forcefully impressed upon the railway authorities."

The Rural Credit Survey Committee strongly suggests an immediate examination of the rates which railways, State buses, etc., charge for the transport of the cultivator's produce to the consuming areas, with a view to considering what reductions may be given to in the rates now charged. A similar review should be undertaken in regard to rates charged by the boat and steamer services.

The Conference on Marketing and Co-operation, 1956, has recommended that in order to ensure quick movement of agricul-

tural commodities by rail or sea on behalf of co-operatives, the State Governments should take steps to sponsor such movements and for that purpose authorise the Registrar of Co-operative Societies to issue the requisite certificates of eligibility for such priority.

It has also recommended that in view of the importance and increasing use of road transport for movement of agricultural commodities, the following facilities should be provided by the State Governments :

(i) Public carrier licences should be given liberally to co-operative societies and particularly to marketing societies who want to have their own transport.

(ii) Loans may be given by Government to enable Marketing Societies to purchase motor vehicles for transport of agricultural produce. The State Government may also arrange for purchase of these vehicles on Rate Contract Basis.

(iii) Inter-zonal restrictions within the same State for movement of such motor transport vehicles should be removed, and there should be free movement within the same State.

Marketing and the State

The financial position of the Indian farmer had been very precarious during and after the Depression period. The seriousness of the fact that the marketing of his produce constituted a real problem had hardly been realised in India until the Royal Commission on Agriculture pointed out that the Indian farmer was labouring under serious difficulties due to various sorts of exploitation by the middlemen, organised bodies of merchants and commission agents. It emphasised the need for undertaking exhaustive marketing surveys. On the recommendations of the Royal Commission and the Central Banking Enquiry Committee regarding the marketing surveys the Central Government decided, in consultation with the Indian Council of Agricultural Research and the State Governments, to create an office of the Marketing Adviser to the Government of India. Consequently the office of the Marketing Adviser was constituted with effect from 1st January 1935 at Delhi with Mr. A. M. Livingston, as the Agricultural Marketing Adviser, assisted by one Deputy Director of Inspection, 3 Senior Marketing Officers, 3 Marketing Officers and 2 Assistant Marketing Officers.

On the recommendations of the Patel Committee, the work of compilation of statistics and dissemination of marketing news, done by the marketing staff, was transferred to the newly created Directorate of Economics and Statistics in the Ministry of Agriculture in

order to avoid the duplication of work and to promote specialisation in certain aspects. Similarly the work done by the Inspection Directorate of the Ministry of Food was transferred to the Marketing Department. The Inspection Directorate of the Ministry of Food was merged in the Central Agricultural Marketing Department and the joint organization has been now styled as the Directorate of Marketing and Inspection of the Minister of Agriculture. Besides this central organization, there are also a number of State marketing organisations *e.g.*, in Bombay, Bihar Hyderabad, Madras, Mysore, Punjab and West Bengal.

The duties of the Marketing Department are threefold : *Firstly*, to carry out marketing surveys and to publish reports describing in detail the way in which the important agricultural and live-stock products are marketed and to suggest future lines of improvement.

Secondly, to draw up grades and grade specifications for commodities under the Agricultural Produce Grading and Marking Act, 1937 after examining their physical and chemical characteristics, to test the working of grades under practical conditions, to enforce them, to supervise grading work, and to control the grading staff.

Thirdly, (i) to study internal and external demand of various agricultural produce and tender advice to the Central and State Governments in regard to the fixation of minimum prices ;

(ii) To build buffer stocks and to dispose of the surplus produce ;

(iii) to draw up standard contract terms for commodities and to enforce them through legislation ;

(iv) to run market news service ;

(v) to tender advice to the State Governments in regard to the establishment of regulated markets ;

(vi) to form co-operative purchase and sale societies.

(vii) to make surveys of Mandis in respect of storage facilities and prepare schemes for godown building programmes ;

(viii) to give advice to the Central Government in regard to the planning of agricultural production.

1. Progress of the work done by the Directorate

During the existence of this Directorate for over 20 years, marketing surveys have been carried out on an all-India basis

and about 70 reports have so far been published and among the commodities covered are :

Rice, wheat, gram, potato, barley, grapes, bananas, citrus fruits, linseed, groundnuts, cashewnuts, lac, sugar, wool, hairs, sheep and goats, cocoanuts, tobacco milk, fish, eggs, hides and skins, coffee, castor seed, ghee and milk products, cardamoms, rapeseed, mustard, sann hemp and arecanuts.

Besides the Reports on the Co-operative Agricultural Marketing and Fairs, Markets and Produce Exchange have also been issued.

Recently (1953-54) the Directorate published marketing reports on tobacco, sesamum, maize and millets, and brochures on grading and methods of sampling and testing vegetable oils and fats.

2. Grading and Standardisation

The surveys revealed the necessity for grading due to mixing of qualities. To this end the Agricultural Produce (Marking and Grading) Act was passed in 1937. It aims to provide the consumer's with a standardised produce of specified purity and quality under a mark of gurantee, *i.e.*, "Agmark". The process of grading and marking is done commercially on a voluntary basis by packers holding a Certificate of Authorization issued by the Agricultural Marketing Adviser. There are now about 500 packers under the various grading schemes.

There are grade specifications for several varieties of rice, fruit, cotton, castor oil, cocoanut oil, sann hemp, ghee, eggs, tobacco, butter, sugarcane, gur, vegetables, coffee, wheat, oilseeds, lac, myrobolans, hides and skins, wool, goat's hair, bristles, wood, turpentine, arecanuts, resin, etc.

As a result all graded goods, especially perishable goods, secure better prices. The value of goods graded was Rs 12 crore in 1948. It was Rs. 18 crores in 1952 and Rs. 14 crores in 1953.

- 3. Establishment of Regulated Markets

The marketing of certain commodities is also regulated by law in some States. For instance, in Bombay cotton is regulated in Amraoti ; in the south the cotton is regulated in Tirpur and Tirunelveli ; groundnuts in South Arcot and Coimbatore ; tobacco in Guntur ; West Godawari and Coimbatore ; arecanuts, cocoanuts, groundnuts, tobacco, turmeric and potatoes elsewhere.

In Bombay there are about 50 regulated markets ; in Hyderabad about 70 ; in Pepsu about 40 ; in the Punjab about 60 ;

4. Standardisation of Contracts

Standard contract terms have been prescribed for wheat, linseed, groundnuts, vegetable oils by the Central Agricultural Marketing Department, this had widened their marketing field.

5. Market Intelligence Service

Market news regarding price, stocks and movements of commodities are broadcast by A. I. R. Daily closing rates are also broadcast in the rural programme.

The news service at the Centre consists of :

- (i) Broadcasting daily Hapur Market rates on the A. I. R.
- (ii) Broadcasting of weekly market reports through the same source.
- (iii) The issue of a monthly publication "Agricultural Situation in India" and the issue of weekly and periodical review on prices for official use.

6. Appointment of Committees

A number of Central Committees have been set up to promote the production and marketing of agricultural commodities like :

- 1. The Indian Central Cotton Committee, Bombay.
- 2. Indian Central Jute Committee, Calcutta.
- 3. Indian Central Tobacco Committee, Madras.
- 4. The Indian Central Oil-seeds Committee, New Delhi.
- 5. Indian Central Coconut Committee, Ernakulam (S. India)
- 6. Indian Central Sugarcane Committee, New Delhi.
- Indian Central Arecanut Committee, Kozhikode (S. India)
- 8. Indian Central Lac Cess Committee, Ranchi (Bihar)
- 9. All-India Cattle Show Committee, Karnal (Punjab)

CHAPTER 23

THE AGRICULTURAL PRICE STRUCTURE IN INDIA

In India the farmer's price or village prices depend at any time on the price prevailing in the nearest market or mandi. The prices in the secondary mandis depend on the prices in the principal mandi in the country, which are interrelated. On account of imperfect communications and friction of other economic forces there is always a lag between the prices in the principal mandis, the secondary markets and the villages. The price in the principal wholesale market of an agricultural commodity is, however, its basic price and the other two vary according to circumstances. In the principal mandis or markets, basic prices of cereals in general are interrelated and depend on the prices of wheat and rice, while those of fibres, oil-seeds and sugarcane are more or less independent of each other at any given time. In India wheat and rice prices are the central prices round which the prices of other foodgrains oscillate.

Basic Price of Wheat

The prices of wheat in the principal markets or mandis are highly correlated. The basic prices of wheat are determined by the action and interaction of the forces of supply and demand. In so far as the country has become dependent on imports of wheat to make up the deficiency on its total food supply, foreign competition may be an important factor in governing basic wheat prices in the country. In future the prices of wheat in U. S. A. and Australia may exert a considerable pressure on the prices of wheat in India. Another factor is that the demand for foodgrains is highly inelastic and therefore a given percentage decline in the available supply results in more than proportionate percentage rise of prices.

Basic Price of Rice

India is not self-sufficient in production of rice. The price of rice in the world market is determined by the exportable surpluses of the three countries, namely, Burma, Indo-China and Thailand. The influence of foreign competition or imports is more pronounced in the prices of rice than in the case with wheat. The Indian grower may receive very poor prices on account of the bumper crop in Burma or may get very high prices if there are no imports from Burma. In any case Burma is like a marginal seller in the Indian market so that in spite of selling relatively a small

percentage of the total rice handled in the Indian markets, its prices influence considerably the prices of certain types of Indian rice with which it competes. The report on the marketing of rice in India shows that although world prices of rice have little direct influence on Indian prices as a whole, in the maritime States of Bengal and Madras, however, the prices of certain cheap domestic rice show a trend similar to those of Burma rice of such qualities as are ordinarily imported into India in large quantities. In so far as prices of the different qualities are more or less competitive the prices of Burma rice indirectly influence prices of all qualities of rice handled in the Indian market.

Moreover, the world prices influence the prices of such other varieties as enter the export market. For example, the price of *Sirumani* rice which has a special outlet in Ceylon is governed primarily by conditions in Ceylon. The prices of *Seeta* rice in Calcutta show a general relationship with London prices.

Since the greater portion of rice produced in a locality is sold within a comparatively limited area there is greater lag in the prices at different centres than in the case of wheat price variation are also very great in rice according to its quality—whether it is fine, medium or bold, whether it is raw or parboiled, whether it is hand-pounded or machine-milled, whether it has a natural tint or is artificially coloured and on the age and the proportion of impurities, broken grains, etc. In the country as a whole, the price differences arising from variations in grade or quality generally range between roughly 10 annas to Rs. 1-4-0 per maund in the case of fine rices and from about 2 annas to 10 annas per maund in the case of medium and bold rices. Finally in Bengal and Madras there is a close relationship between the prices of paddy and rice.

Cane and Sugar Prices

The prices paid for cane by sugar factories largely depend on the prevailing prices of sugar as well as gur which provide a maximum and minimum limit for the former. U. P., Bihar and Madras fix minimum prices for cane. The fixation of cane prices in different parts is not based on the relative costs of production. The Marketing Board has suggested that the best course would be to fix minimum prices of cane for different tracts in accordance with their costs of production. The price of gur depends chiefly on home production as there is very little of foreign trade in that commodity and the carry over at the end of a year cannot be large due to its perishable nature. The price in any particular season are therefore influenced to a very great extent by output in the season and prices differ according to quality of production in the different tracts.

There has been in recent years a close resemblance between the price movements of sugar and gur, the former being higher than the latter. When prices paid by sugar factories for cane are not relatively high the cultivators divert their supplies and manufacture more of gur. But sugar and gur are not substitutes for each other. Hence the interrelationship is not there. In any case, the prices obtained by the cultivators bear little relationship to the expenses of production.

Prices of Agricultural Commodities meant for Export

In the case of agricultural products (e.g. linseed, cotton, tobacco) which are largely exported, foreign competition and prices obtained in foreign markets are the main determining factors. For instance, in the case of linseed, Indian prices follow the course of prices of linseed in other important international markets. In the case of cotton, prices are mainly influenced by foreign demand and the prospects of exports and have little reference to the expenses of production in the country.

To sum up, prices of agricultural commodities in India tend to be similar over wide areas after making allowance for distance from the producing areas and costs of transportation; while the expenses of production differ considerably from one tract to another tract. There is again a complete divorce between the expenses of production and the prices obtained by the farmers. Under the free play of economic forces the grower may receive any price, which may be fair, grossly inadequate or high, quality is seldom a factor in the determination of prices and fluctuations in different periods of the year are wide with a marked depression at the harvest time.

The trends of agricultural prices and their effects on the earnings of the agriculturists in India may be briefly indicated. During the great depression, the agriculturists were hit hard by the great fall in prices. The price of cash crops fell to a greater extent than the prices of the crops grown for domestic consumption by a farmer. Again prices of crops meant for export like linseed, cotton and tobacco suffered most. At the outbreak of the Second World War in 1940, farm prices had not in general recovered to the same extent as other prices of manufactured articles, but later on moved much faster. The rise was particularly sharp in the case of food articles and continued high price of food-stuffs resulted in a disparity between food and industrial prices. But the prices of chief crops of export like jute, cotton did not rise to the same extent. To achieve a price parity, price control measures became necessary.

Index Numbers of Wholesale Prices in India

(Base of 1939=100)

Year	Food & Tobacco	Other Agri. Com- modities	Raw materials	Manufac- tured articles	General Index
1939	100.3	100.7	100.2	100.0	100.3
1940	100.2	98.2	118.9	109.3	108.4
1941	128.6	152.7	147.2	161.2	142.5
1942	160.2	141.6	161.8	174.6	161.1
1943	298.2	217.3	183.8	251.6	238.0
1947	306.1	...	377.5	286.0	308.2
1953	381.1	356.3	460.1	367.0	393.9
1955	304.1	333.0	411.0	373.0	355.0

The following table further gives the Index No. of wholesale prices in India, of the food articles :—

(Base year 1939=100)

Year	Index No. of Food Articles	Year	Index No. of Food Articles
1947-48	306.1	1951-52	398.6
1948-49	382.9	1952-53	357.8
1949-50	391.3	1953-54	384.4
1950-51	416.4	1954-55	339.8
		1955-56	305.0

These figures show a downward trend in prices of food articles since 1950-51.

Stabilization of Agricultural Prices

Agriculture produces food-stuffs and raw materials the demand for which is in the aggregate relatively stable in the short run, while the supply of agricultural products fluctuates widely from year to year and from one part of the year to another, on account of the variations in yields, due to seasonal and weather conditions, (ii) variations due to supplies being more abundant in certain months of the year, (iii) deliberate variations attempted by the producers and (iv) variations arising out of conditions of marketing. These fluctuating supplies constitute the most important single factor responsible for the wide fluctuations in agricultural prices. These fluctuations in the price of agricultural products are the greatest hurdle in the way of agricultural development, for they bring ruin to many. It was for this reason that agricultural countries suffered most during the Depression of 1929. According to Sir Roger Thomas, "next to rain price changes have been the greatest enemy of the farmer.") The following table shows the wholesale prices of important agricultural commodities at selected Centres in India :—

THE AGRICULTURAL PRICE STRUCTURE IN INDIA

Wholesale Prices of Certain Important Agricultural Commodities and Animal Husbandry Products at Selected Centres in India¹

(In rupees per maund except where otherwise stated)

Commodity (1)	Market (2)	Quality (3)	Month-end prices									
			Sept, 1936 (29.9.56) (4)			Sept, 1955 (24.9.55) (5)						
<i>Foodgrains—</i>												
Wheat	Moga	591	15	4	0	12	8	0				
	Chandausi	Dara	14	14	0	11	5	0				
	Saugor		14	8	0	10	8	0				
Jowar	Akola	White	13	8	0	5	8	0				
Gram	Abohar		11	7	0	6	4	6				
Maize	Bahraich		10	12	0	8	0	0				
<i>Dals—</i>												
Gram (Split)	Bombay		15	12	0	11	2	0				
	Paina		16	0	0	11	0	0				
Arhar (Split)	Delhi	Desi	16	8	0	11	0	0				
	Patna		18	0	0	14	0	0				
	Bombay		19	6	0	14	8	0				
	Madras	Nagpur	22	8	0	16	10	0				
<i>Potatoes—</i>												
Potatoes	Patna	Safed	15	0	0	12	8	0				
	Calcutta	Madras	16	0	0	15	0	0				
	Mertupalayam	Rasi I	12	0	0	33	8	0				
<i>Sugar and Gur—</i>												
Sugar	Bombay	D-28	32	2	0	32	11	0				
	Calcutta	Indian (Med.)	32	12	0	31	12	0				
Gur	Hapur		13	0	0	10	15	0				
	Madras	II Sort	16	14	0	9	10	0				
	Bombay	Kolhapur	20	8	0	12	8	0				
<i>Livestock Products—</i>												
Milk	Delhi		16	0	0	14	0	0				
Ghee	Calcutta	Agmark (U.P)	205	0	0	195	0	0				
	Khurja	Desi	N.R.			174	0	0				
	Bombay	Porbandar	205	0	0	174	0	0				
<i>Fish and Eggs—</i>												
<i>Sea Fish</i>												
Fish	Bombay	Prawns	41	2	0	30	14	0				
		Pomfret	102	13	9	123	7	0				
	Calcutta	Rohu	110	0	0	100	0	0				
			(a)									
		Hilsa	65	0	0	50	0	0				
Eggs (per 1,000 eggs)	Calcutta	(a)										
		Hen (Ungraded)	110	0	0	85	0	0				
		(a)										
		Ungraded	106	4	0	102	8	0				
	Madras		110	0	0	90	0	0				
	Bombay		125	0	0	105	0	0				
	Jullundur											

¹ *Agricultural Situation in India*, Oct., 1956. pp. 509-510.

(1)	(2)	(3)	(4)	(5)
<i>Oilseeds, Oils and Olefines—</i>				
Mustard seed	Calcutta	Yellow	38 8 0	21 8 0
	Kanpur	F.A.Q.	37 12 0	20 0 0
Rapeseed	Bombay	Yellow	32 4 0	17 8 0
Groundnut Kernel	Bombay	Bold	24 12 0	15 11 0
	Madras	Superior	25 9 0	16 0 0
Linseed	Bombay	Bold	22 9 0	17 6 0
	Kanpur	F.A.Q.	23 12 0	16 8 0
Castor seed	Bombay	Bold	19 9 0	12 1 0
	Jadcherla (Hyd. Dn.)		19 9 0	11 2 0
		(a)		
Sesamum seed	Madras	White	37 2 0	21 8 0
		Black	35 10 0	20 8 0
Cottonseed	Bombay	Varad	9 8 0	8 0 0
	Abohar	Desi	14 8 0	8 12 0
Copra	Alleppey	Vettumeni	37 0 0	35 12 0
Mustard Oil	Calcutta		84 0 0	47 0 0
	Kanpur	F.A.Q.	86 9 0	45 0 0
Groundnut Oil	Bombay		54 0 0	31 9 0
	Madras		48 11 0	33 7 0
Linseed Oil	Bombay		48 9 0	34 11 0
	Kanpur		54 4 0	37 0 0
Castor Oil	Bombay		44 2 0	29 0 0
	Kanpur	F.A.Q.	45 9 0	22 8 0
Sesamum Oil	Madras	Salem	65 13 0	37 1 0
	Bombay		64 10 0	37 0 0
Coronut Oil	Cochin		51 11 0	52 2 0
Mustard Cake	Kanpur	F.A.Q.	10 0 0	6 8 0
Groundnut Cake	Kanpur		8 2 0	5 0 0
	Bombay		7 6 0	5 8 0
<i>Cotton, Wool and Jute—</i>				
Kapas (per candy of 784 lb.)	Abohar	Desi	380 0 0	222 0 0
	Tirupur	Karungani III	N.Q.	190 12 0
Cotton Lint (784 lb.)	Abohar	Desi	695 0 0	515 0 0
		320F	848 0 0	648 0 0
	Bombay	Jarilla (197/3)	820 0 0	600 0 0
Wool	Bombay	Joria white fine	267 7 0	277 11 0
		Joria white medium	N.Q.	246 11 0
Jute (per bale of 400 lb.)	Calcutta	Indian Mill Firsts	190 0 0	165 1 0
		Mill Lightnings	175 0 0	150 1 0
Loose Jute (per maund)	Calcutta	Assam Middles	31 0 0	26 8 0
		Pakistan		
		District Middles	35 0 0	30 8 0
<i>Beverages—</i>				
Tea (per lb.)	Calcutta	Consumption in India		
		Medium Dooar Dust	1 14 0	1 12 0
		Export		
		Clean black Pekoe	1 13 0	2 6 0
Coffee (per cwt)	Coimbatore	Plantation 'A'	223 0 0	230 0 0
		Plantation 'PB'	231 0 0	257 0 0
	Chikmagalur	Plantation 'A'	N.R.	238 0 0
	Mangalore	Plantation 'A'	224 0 0	227 0 0
Tobacco (per lb)	Guntur	Flue Cured	1 12 0	2 4 0
		Virginia		

Most farmers cannot ordinarily adjust, in response to changes in the price level, the quantity and quality of their outputs by altering the quantity and quality of their inputs. Unlike in industry, nature plays a very significant role in agriculture in the determination of the quantity and the quality of the output. Farming is a biological process and there is a greater time-lag between the changes in prices and adjustments in production. Moreover, farming is often a complementary enterprise so that certain products have to be included in the production schedule not because they can be produced at the lowest unit cost but because they increase the overall profitability of the farm. Technical efficiency in farming is not, therefore, synonymous with the economic efficiency.

In the production of most farm products, the overhead costs form a relatively larger proportion of the total costs than the variable costs which determine the quantity of the output. The entire cost structure in agriculture is relatively rigid and moves more slowly than the level of prices, especially in times of falling prices. The position is made worse by the slow turnover of agriculture. In times of falling prices, therefore, a farmer cannot save much by reducing the quantity of his production. He may actually increase his production and or sales with an attempt to maintain his money income and this will itself tend to lower the prices further. This is especially true of peasant farmers carrying on agriculture with family labour, as a way of life, rather than as a business, buying only small quantities of raw materials and among whom competition is more or less perfect cyclic fluctuations in agriculture, therefore, reflect themselves not so much in the variations in the output and employment, as they do in industry, as in the changes in the farm products and prices. It is, therefore, inadvisable to leave agricultural prices to seek their own levels and it is necessary to resort to corrective measures for arresting the fall in prices not only for securing stable prices and incomes to the farmers but also for securing some stability for the entire Indian economy of which agriculture forms the very base, as about 70 per cent of the total population is still engaged in agriculture.

Meaning

Price stabilization is to be clearly distinguished from various forms of farm relief and legislative measures which are introduced with the idea of raising domestic price levels. As pointed out by the Businessmen's Commission of 1927 on Agriculture in U. S. A., "Real price stabilization would affect a mitigation in price fluctuations, but this would involve scaling down of the heights of prices as well as an elimination of their depths. Though this would not make an incompetent producer rich, it would prevent the ruin of

reasonably efficient farmers whose production is really needed and who tend to be replaced by new-comers liable to suffer from the same fate." Price stabilization of agriculture would thus enter into the wider field of stabilized incomes and stabilized wages of not only those engaged in the field of agriculture, but also the mass of non-agricultural workers as well.

The Need for Stabilization of Agricultural Prices in India

The importance of fixing fair prices for agricultural products cannot be overemphasised in India, for unless the producers get fair money for their marketable surplus, no increments in efficiency and amount of production can successfully raise the standard of living of the masses. This point was well emphasised by Sir Jogendra Singh in 1944. He pointed out that "a cultivator could not be expected to increase production, if the increased production was to reduce the money value of his labour. That was a difficult problem but it had to be faced, not only in the interest of agricultural production, but in the interest of general economy of the country. It was on the purchasing power of the bulk of our population that the future expansion of industry and indeed the raising of the living standard of both rural and urban population depended."

In this context the Prices Sub-Committee of the Policy Committee on Agriculture, Forestry and Fisheries appointed by the Government of India wrote as "When a general expansion of agricultural production is aimed at in the present circumstances of the country a guarantee of minimum price is an effective measure to adopt and forms, therefore, an essential part of the policy of agricultural development." It further said, "The effective guarantee of a minimum price will introduce not only an element of stability in agriculture but will also promote stability in other spheres of economic life. The purchasing power of a large population is thereby steadied which will also promote constant demand for industrial products."

The Famine Enquiry Commission, 1945, opined, "A fair return to the cultivator is one of the foundations not only of agricultural prosperity, but general prosperity also." Similar were the views of the Bombay Planners, who wrote : "Large fluctuations in the price of agricultural commodities have been among the most important factors which have prevented agriculturists from making more sustained efforts to improve the yield of the land. To check these fluctuations in future and to assure to the cultivators a measure of security in respect of the prices of his crops the Government should adopt a policy of fixing fair prices."

The Co-operative Planning Committee observed in this connection thus : While the risks are high in lines of production they are particularly serious in the sphere of agriculture because of the vagaries of the monsoon, the inelasticity of production, the large number of small producers and wide range of price fluctuations. Moreover, the fluctuations in agricultural prices in particular, unbalance the whole economy of the country since they affect the incomes of more than 70 per cent of the population thereby affecting the demand for all types of commodities. Besides they also influence the prices of industrial goods through their effects on the costs of living and on costs of raw materials. The State must, therefore, adopt a policy of actively supporting agricultural prices within a range which is fair both to the producer and the consumer if a slump is to be avoided in the next few years, if stability is to be introduced, in the whole economic system, if the risks involved in production, trading and processing are to be reduced to manageable proportions and if the co-operative movement is to be enabled to compete with other forms of enterprise to a greater success.

The matter became so important that the F. A. O. meeting at Copenhagen set up a World Food Board for stabilizing agricultural prices on the international market. So much so that the F. A. O. in its recent report attributes the huge increases in world food resources mainly to the widespread adoption of farm price support and other measures to stabilize farmers' incomes giving them confidence to grow more food.

The policy of agricultural price stabilization was first accepted in the U. S. A. after the 1919-20 decline in the prices of agricultural staples. A regular policy of stabilization of agricultural prices is being pursued even in the U. K., Canada, New Zealand and Australia. Nearer at home, is Japan where a series of Rice Laws were passed and minimum and maximum prices were calculated by reference to cost of cultivation, cost of living, and general trend of prices, on the principle of the ratio of the index number of the price of rice to the index number of the prices of commodities in general.

Objectives of Stabilization of Agricultural Prices

It is, therefore, necessary that in India the policy of stabilization of agricultural prices should be adopted with the following aims :

- (i) In the short run farmers should be able to secure incomes higher than those they would have obtained, if prices were allowed to be determined by the mechanism of a free market.



(ii) In the long run the objective should be to secure for the farmers nearly the same incomes as are available to similar persons engaged in other occupations.

(iii) It is especially necessary to increase agricultural production and the level of agricultural efficiency in the long run for which a price support policy is one of the most effective devices.

The Bengal Famine Enquiry Commission pointed out, "The hard core of the problem of stabilization of agricultural prices generally is the stabilization of the price of rice and wheat." This is because 80% of the land in India is devoted to rice, wheat and other food crops, and *secondly*, food prices generally represent the most important element in the cost of living of the non-agricultural classes.

The policy of stabilization, according to the Commission, involves the creation of a machinery to enforce fixed prices. The following steps are, therefore, necessary for such a policy :—

(i) Determination of a level at which the prices of particular commodities have to be stabilized. This level is usually a range between a selected maximum and minimum levels. This level selected should be such as is fair both to the producer and the consumer.

(ii) Maintenance of stocks by the Government. This involves machinery for procurement of such stocks. This may be done through ordinary trade-channels or by the Government employees directly. The stocks should be enough to enable the Government to supply the commodity to the market at the minimum price fixed by it. The Government should maintain the price within fixed range by buying and selling the commodity at maximum and minimum prices respectively as the need may arise. Private trading should be permitted only within this range.

If the price tends to fall below the fixed minimum it should be pushed up by (a) stimulating exports, or (b) by Government purchases. If the price tends to rise above the maximum the Government should (a) prohibit exports and (b) release their own stocks at prices lower than the maximum.

(iii) For success the policy of stabilization should be under the control and direction of the Central Government.

The Prices-Sub-Committee has made the following recommendations regarding the stabilization of agricultural prices :—

1. As Indian agriculture is subject to heavy risks due to vagaries of monsoons and other climatic factors and damage by

pests and diseases as well as fluctuations in the price, it is essential that the Government should guarantee prices with a view to securing comparative stability of agricultural prices and incomes so that a reasonable parity is established between agricultural and industrial incomes.

2. In order to give incentive for higher productivity of land to the cultivator, it is essential that he should be guaranteed minimum floor prices for his produce. This guarantee of minimum price will not only introduce an element of stability in agriculture but will also promote stability in other spheres of economic life and will assist in securing a general rise in national income.

3. In order to safeguard the interests of the consumers it is necessary that prices should be prevented from rising beyond a prescribed maximum. Besides special protection should be given to more vulnerable and poorer classes by granting subsidies on consumption. The guiding principle in fixing a price should be that prices are fixed within a range which would be fair both to the producer and the consumer and capable of being put into practice. This would necessitate a guarantee by the State to purchase all stock offered to it at the minimum price and an undertaking to release stocks at a price not exceeding the maximum.

4. The fair price should be such as would leave to the producer an income sufficient to maintain him and his family at a standard of life equivalent to that enjoyed by comparable classes of the population. For this purpose due allowance should be made for the cost of such goods and services as make up a reasonable standard of living for cultivators as a class.

5. A fair price should cover the cost of production of a producer who has a representative size of a holding and is wholly dependent on such holding and secondly it should enable the producer to pay a fair level of wages to the agricultural labourer.

6. For the determination of a fair price, calculation of the costs of different items which enter into costs of production and costs of living should be estimated by detailed and continuous enquiries especially planned and conducted with this object. The machinery for the collection of data should be placed on a permanent footing until such data are available, agricultural prices should be maintained at reasonable parity with agricultural costs. The most suitable period for the purposes of parity would be the quinquennium from 1924—25 to 1928—29. The aim should be to maintain the same relationship between agricultural prices and the index of agricultural costs as prevailed in the base period and to determine the prices accordingly. Thus the policy should be to fix maximum and minimum prices on the basis of fair prices.

7. In fixing the minimum prices it will be necessary to take into account the relation between the agricultural prices and the general level of prices in the country, the relation between the price in India and abroad. Any assistance to agriculture in the form of subsidies, remissions of land revenue and other dues will depend on the financial resources available to the State for the implementation of the price guarantee.

8. As a matter of State policy, if may be necessary to reduce the general level of prices for over-all economic reasons. Since the prices of foodgrains and agricultural raw material occupy a crucial position in the domestic price structure, a reduction in their prices may be a necessary preliminary to a general price reduction. If at all such reduction is inevitable, it should not exceed $12\frac{1}{2}\%$ of the current fair prices in any one year and once a reduction is made, no further reduction should be permitted during the crop year.

9. The market prices should not be permitted to fall below a rock-bottom minimum level in future. This limit is set by the fixed elements in agricultural costs and a fall in the market prices below this level will upset the economic balance of the country.

10. The minimum price for a commodity should be calculated for the principal producing areas on the basis of Fair Average Quality (F. A. Q.) of the product. Suitable differentials should be allowed in respect of different grades and qualities. The minimum price of other areas should be worked out by adding to this figure the normal cost of transport, marketing and other incidental expenses.

11. With a view to protect the interests of the consumers, the State should aim at maintaining the wholesale price below a determined maximum. The maximum price should be based on the minimum price, making allowance for the normal trade differences, the storage charges and the market fluctuations in supply and demand. The maximum price should not be lower than the parity price. It should be fixed at 25% above the minimum price, or alternatively, at the fair parity price, whichever level is higher.

12. The fixation of minimum price would require that the Government should guarantee to purchase all supplies offered to it at that price at an adequate number of marketing centres within an easy access to cultivators in order to enforce prices at the minimum level. The State may regulate the foreign trade (especially imports) by means of quotas, tariffs and State trading.

13. When prices move above the prescribed maximum, the State should provide supplies to the market by sales from its own stock at a price not exceeding the maximum. In order to prevent

the prices from rising above the maximum the State should have powers to requisition stocks, to regulate the distribution of supplies and to enforce the control of prices by law in an emergency.

14. The State should have special powers to regulate acreage under individual crop in a particular area or an all-India basis and to enforce adequate standards of land management.

15. The Reserve Stocks should be built up from the internal surplus. In the interim periods reserves should be built up from imports. The size of R. S. should not be lower than $\frac{1}{2}$ million tons.

16. The financial resources necessary for carrying out a price policy may relate to (i) fixed capital required for the construction of necessary storage accommodation ; (ii) working capital for holding of reserve stocks and for carrying out purchase and sale operations ; and (iii) operating costs for paying interest on fixed and working capital, depreciation and maintenance of godowns, transport and handling charges, expenses on account of staff.

17. The minimum and maximum prices should be fixed up for principal food-grains like wheat, rice, bajra, jowar, as their prices are likely to influence those of other food-grains. The principles of price policy recommended for food crops should also apply to commercial crops and the mode of implementation would have to be modified to suit the special circumstances of each crop. For animal husbandry products, the price should be regulated by the State Governments on a regional basis. Cold storage facilities should be provided for such products.

18. Similar machinery, both administrative and executive, should be set up to carry out three-fold functions, viz : (i) the formulation and laying down the policy to be adopted ; (ii) the determination of minimum and maximum prices and the enforcement of prices fixed ; (iii) for this purpose an All-India Agricultural Prices Council should be set up consisting of the representatives of the Central and State Governments.

A convention should be established that the recommendations of the Council will be implemented by the member-units. The Council should set up two bodies : (i) a Price Determination Commission, consisting of 3 members, which should have under it a Bureau of Economics and Statistics for collection, analysis and interpretation of all data. On the recommendations of this Commission the Council should fix a set of prices—both minimum and maximum—for different crops in different regions, taking into account the principle of fairness and other difficulties of enforcement and other relevant matters. After fixing the prices it would

require the Commodity Corporation to take necessary executive action for enforcing the prices fixed : (ii) a Commodity Corporation also consisting of 3 members, should make prices fixed by the council effective in the market. It will regulate imports and exports, maintain reserve stocks and ensure the renewal of the physical stocks from time to time, and would guarantee to purchase all that is offered to it at the minimum price and would also undertake to sell from its stocks at the maximum price. It would further be free to buy and sell in the market at any price within the fixed range either for building up or turning over its reserve stocks.

19. The expenses of the All-India Agricultural Price Council should be met from the contributions made by the participating State and the Central Government. If profits are made during the first five years, they should be allocated to the reserve fund and losses incurred, if any, should be borne by the participating Governments in agreed proportions. In subsequent years the losses should be met from the reserve fund to such extent as may be determined by the Council, the balance being shared by the Governments, according to agreed proportions.

20. In order that the benefits of fixing prices reach the cultivators the State should also take these ancillary measures :

(i) The system of agricultural marketing should be improved by the establishment of marketing co-operatives and regulated markets so that the guarantee price may not be monopolised by the traders.

(ii) The business of money-lending should be regulated and rural credit system should be improved by the extension of co-operative credit and setting up of Credit Corporations.

(iii) The system of land tenure should be improved with a view to provide incentive to improvements and increase the efficiency of production.

(iv) Adequate minimum wages should be provided to the agricultural labourers.

(v) Various production programmes—like anti-erosion and soil-conservation measures, irrigation facilities, distribution of good seeds, manures, implements and other agricultural requisites and the provision of technical advice—should be organised by the State.

(vi) Holdings should be consolidated and as far as possible farming should be carried on on the co-operative basis.

(vii) the cultivator should be educated through the radio and cinema.

(viii) In order to associate the cultivator in a programme of development, associations representing different agricultural interests on a village, taluka, district and State-wise level should be formed.

Features of a Price Support Policy

Any price support programme to be effective must do two things : (i) It must fix up the price and (ii) the price which has been fixed must be enforced henceforth.

I. Price Fixing

The first essential of every price support policy is naturally the fixing of prices with the object of maintaining them at a desired level. In this connection we will have to consider four important problems, *viz.* (i) By whom should the price be fixed? (ii) For what commodities prices should be fixed up; (iii) At what level should the price be fixed? and (iv) Should the level of prices fixed remain same or should it be altered from time to time; (v) who should have the benefit of price fixing?

(a) *Price Fixing Authority.* In view of the large dimensions of the country, the magnitude of the problem and the disparity in local conditions, it is better that the State Governments should fix up prices for their own States, of course in this matter they should be helped by the Central Government by tendering expert advice, supervising the working of State Schemes in the interest of reasonable amount of administrative uniformity and in the light of the overall conditions of demand and supply and also to make a large portion of the finance required available to the States and to bear a part of the cost of the Scheme.

(b) *Selection of Commodities.* How many and what commodities should be selected for price fixing will naturally depend on (i) the importance of the commodity in agriculture and in the national economy as a whole; (ii) the extent to which relative prices have fallen; and (iii) the resources available—in men, materials and money—for enforcing the scheme.

The foodstuffs may be regarded as the basic products of agriculture as well of entire economy; and if their prices have fallen to a greater extent than the prices of commercial crops, the prices of foodstuffs—such as wheat, rice, millets, etc., should be fixed and enforced first, especially because neither the State Governments nor the Central Government seem to possess all the requisite resources for extending the price fixing programme to all or most of the commodities.

(c) *Level of Prices.* The level of prices fixed should be such as will enable the producer on the representative farm : (1) to make a reasonable amount of profit after meeting all of his cost of production, including interest charges for the use of his own capital as well as wages for the employment of his own labour, and (ii) to enable such a producer to maintain himself and his family in at least the same standard of living as he had before and to bring it in line with the standard of living available to comparable workers in other occupations.

It would thus be necessary to know the costs of production of the representative farm in agriculture. Although it is well known that for several reasons it is very difficult to calculate the exact unit costs of production in agriculture in general and in Indian agriculture in particular, all attempts should be made to collect as much information as possible so that at least some rough estimate can be made about the costs of production of the different commodities on the basis of which their prices can be fixed.

For enabling the farmers to maintain their purchasing power relative to that of the other sections of the population a Parity Index will have to be worked out and farmers' incomes will have to be kept up or down as other incomes in the country will rise or fall. However, while computing a farmer's income, it is essential to take into account his income from other sources also such as fishing, forestry, animal husbandry and small industries. Although the general argument against parity incomes that they perpetuate the traditional allocation of resources may be ignored here, it is very necessary that the base period for the parity index, the items to be included and to weights to be assigned to the items will have to be very carefully decided.

Simultaneously the influence of the forces of international supply and demand must be taken into account and the level of prices fixed must be such as to enable the government to enforce it in practice.

(a) *Variations in Prices.* The level of prices should not and cannot be rigid because different prices will have to be fixed in the light of the different regional demand and supply conditions. Prices should there vary from State to State and region to region. The cost of transport and insurance should very largely determine the price difference in a surplus area and a deficit area.

Secondly, in one and the same region, different levels of prices should be fixed for different qualities or grades of the commodity so as to prevent an encouragement to the growers of the poorer qualities and a discouragement to the producers of the better varieties of a commodity.

Thirdly, prices should vary from season to season. Although it is desirable to reduce the influence of seasonality on the prices of agricultural commodities, some difference in the prices will remain and this should be recognised by fixing different prices for different seasons, after taking into consideration the demand and supply conditions of the season as well as the cost of with holding or expediting sales.

Fourthly, Governments' buying prices will have to be different from their selling prices. The buying prices will be the minimum prices which will have to be enforced when the market prices tend to fall below the minimum level; while the selling prices will be the maximum prices at which Government will have to make supplies available to the consumers, so as to prevent an undue rise in the cost of living and the cost of production. The maximum prices should be 20% higher than the minimum prices. The minimum prices should be announced and made widely known to all the farmers sufficiently in advance of the sowing operations so that farmers can make necessary adjustments in the choice of their inputs. The maximum prices should be announced after the Government secures fairly reliable information about the crop estimates and general conditions of supply in relation to demand.

(e) *The Recipient of Benefit*. If the minimum prices are fixed in such a way as to leave the representative farmer with a sufficient amount of profit over his costs of production, all farmers whose costs of production are the same as or lower than those of the representative farm will benefit. The marginal farmers will have then to be paid direct subsidies. Moreover, the amount of benefit accruing to a farmer will also be determined by the quantity of his marketable surplus. Direct subsidies will have to be paid to the smaller producers because price policy will benefit the relatively large farmers more.

II. Enforcement of Price Support Policy

After the commodities have been selected and their level of prices fixed, it becomes necessary that the prices fixed must be enforced. This problem of enforcement can be dealt with under two heads, *viz.*, (a) Administrative side and (b) Financial side.

(a) Administrative side

For the enforcement of the fixed prices it is to be considered as to how much of the commodity should be bought or sold; where to buy and where to sell; from whom to buy and to whom to sell and where to store the commodity.

It is not practicable for the Government to buy the entire quantity of a commodity offered for sale. Of course, a certain volume of production should be earmarked which the Government

is to buy ; and the production beyond that limit should be disposed of by the farmers themselves. The commodity has to be bought when the market price falls below the minimum price and it has to be sold when the market price rises above the minimum price. Buying and selling operations should cease when the market price reaches the minimum fixed. Besides a reasonable stock of the commodity whose price has been fixed should always be maintained.

The place of buying and selling has to be decided. Buying a commodity on the farm is not possible, both administratively as well as economically. Important market centres should, therefore, be selected for the purpose and they should be well made known to the farmers. Selling operations should be conducted in the important consuming centres of the country in a given region. It may also be that in order to keep the prices up, exports of the commodity have to be encouraged and for bringing down the price, the commodity has to be imported. Thus dealings in the international markets may follow a price support policy.

The commodity should ordinarily be bought from the producing farmers and should be sold to the genuine consumers so that middlemen can have no chance of exploiting the situation. But if the commodity can be properly graded and the middlemen can be expected to be reasonably honest, co-operative societies or private traders possessing the necessary organisation and experience can be entrusted with the task of buying and selling for a fixed commission.

Lastly, The stocks of the commodity should be stored either at the Taluka or District town within the area of production and as these towns are generally the important market-places as well as consuming centres, the transport costs as well as the loss in transit can be reduced. Some of the railway station towns and villages should also be used for the purpose, specially when the stocks of the commodity are likely to be transported in future to the consumers in distant cities and ports from where the commodity may be exported to the foreign markets. Similarly the bulk of the imported commodities should be stored in the port godowns and should later on be transported to the interior, only if and when required.

(b) Financial Side

Two kinds of finances will be required for implementing the scheme of price support policy, *viz.*, capital for construction of warehouses, for buying containers and packages, for acquiring furniture, fixtures, etc., and for maintaining a reasonable stock, and secondly capital will be needed for buying the stocks internally and externally for meeting collection, handling transport, warehousing,

insurance and distribution charges; and for the payment of salaries, wages and allowances to the employees.

The total amount of finance required will largely depend upon the number and quantity of commodities to be bought; the level of prices fixed, the location of the stocks, and the turnover of the stocks.

In this connection it may be noted that if only three major cereals—wheat, rice and millet—are selected for a price support and even if only about 3 million tons of cereals are to be bought and stored, it may mean an initial fixed capital expenditure of about Rs. 15.20 crores; a working capital expenditure of about Rs. 80.90 crores and an annual operational expenditure of about Rs. 4.5 crores. A part of this fixed capital expenditure can be saved in the short run by hiring rather than constructing warehouses.

The Cost of Price Support Policy

In estimating the cost of a price support policy the following items of direct and indirect costs should be taken into account :—

- (i) Interest on the fixed and working capital employed;
- (ii) Administrative expenses like the salaries, wages and allowances paid to the employees;
- (iii) Cost of transport, handling, warehousing insurance;
- (iv) Depreciation of fixed assets, containers and packers;
- (v) Loss in handling collecting and storage—shrinkage, deterioration in quality, thefts, etc; and
- (vi) Subsidies and / or tax concession to marginal producers, producers with small marketable surplus, consumers, manufacturers and exporters;
- (vii) Loss arising out of the need for a deliberate destruction of a portion of or all stocks.

Over and above all these, it is necessary that in order to make the price support policy a success, the Government should also attempt to increase the demand for agricultural commodities by encouraging exports of these commodities and by increasing the levels of income and employment in other sectors of the national economy.)¹

In view of the recent general fall in prices of foodgrains and other agricultural commodities and the variation that existed in different markets within the country, and the need to arrest the

fall and to reduce price variations by a declared price policy of the Government, the Central Government, set up a five-man Committee in July 1955 and the chairmanship of Shri M. V. Krishnappa, with the following terms of reference :—

(1) To collect relevant data regarding variations in the prices¹ of few foodgrains and other agricultural commodities—rice, jowar, barley, wheat, maize, pulses other than gram, rape and mustard, groundnuts, cotton, jute, sugarcane, tobacco, potatoes, fruits, vegetables and cattle feeds.

(2) To examine the causes of inter-State or inter-regional or inter-local disparities between these prices and between price movements at different parts of the year in the same market.

(3) To suggest ways of reducing disparities in prices and in price movements as between different areas and as between different times.

The Committee is empowered to collect from various sources and official records data relating to the above commodities in respect of :—

- (i) Variations overtimes in the prices of the same commodity.
- (ii) Variations in space in the prices of the same commodity.
- (iii) Variations in prices received by the producer act on the differences in the systems of marketing.
- (iv) Variations in prices of agricultural commodities in relation to manufactured articles.
- (v) Inter-commodity variations.
- (vi) Seasonal fluctuations.
- (vii) Effect of the announcement of export or import quotas on the internal prices.
- (viii) Effect of prices in foreign countries on internal prices.

1 The word 'price' here has the following meanings :—

- (i) *Farm price*, price at which the producer gets for sale of the produce at the farm.
- (ii) *Primary wholesale price*, price at which the wholesaler purchases from the producer in bulk or at the auction in an assembling market.
- (iii) *Secondary wholesale market*, price at which a wholesaler or retailer purchases from another wholesaler in the assembling market.
- (iv) *Retail price*, price at which the ultimate consumer purchases from the retailer.

CO-OPERATIVE MARKETING

With the commercialisation of agriculture efficient marketing is as necessary as scientific agricultural operation and so side by side with the progress in cultivation methods a suitable machinery for the efficient sale of the farm produce should also be made. The income of the farmer today, therefore, depends to a large extent on the ability with which he is able to market his produce for a fair price. Even if the production side is strengthened and cultivation improved, the cultivator would not gain much, if there is no proper arrangement for the marketing of his produce as the benefits of better farming would probably be reaped by middlemen intervening between them and the ultimate consumer. Defective marketing not only deprives the cultivator of his legitimate share but his standard of living is lowered considerably. Hence, the co-operative marketing of agricultural produce has acquired great importance.

Advantages of Co-operative Marketing

Co-operative marketing strengthens the farmer's position as a seller, assures him of a regular trade outlet, and enables him to obtain better prices. It, at the same time, integrates marketing and productive operations, reduces waste by preventing duplication of agencies and provides facilities for improvement in the quality of agricultural products. It further, attempts to eliminate those undesirable forms of speculation in which the motive is profit from price manipulations. No influence is so important in the economic education of farmers as their own efforts in co-operation of marketing. The very attempt on the part of farmers to solve their problems teaches them basic economic truths. The operation of co-operative marketing organisations teaches farmers that agriculture is primarily a form of business. Co-operative marketing also teaches farmers that the problem of marketing is closely related to the problem of production. The marketing organisations have found from experience that the demand for agricultural products is increased by an improvement in production methods which result in products of higher quality. Again, when farmers themselves undertake marketing programme, the practices which greatly reduce the economic value of their products are brought home to them. Co-operatives also serve an important function in supplying information on the many factors which affect the economic status of farmers.



Under the system of co-operative marketing, the whole responsibility for the marketing of agricultural produce is undertaken by the farmers themselves organised on a co-operative basis. Co-operative marketing has achieved striking success in some foreign countries. In Denmark, for instance, co-operative sale societies discharge most of the marketing functions. The co-operative dairies in that country receive 91 per cent of the milk delivered to dairies and supply most of the butter exported. In Norway, between 80 and 90 per cent of the producers of milk were members of co-operative dairies. In the U.S.A. there were over 20,000 Farmers' Marketing and Purchasing Associations with a membership of 4,000,000, and business of nearly 3 billion dollars. Co-operative marketing also plays an important part in the marketing of agricultural produce in Canada, Australia South Africa and New Zealand.

There are many Co-operative Societies which commence operations exclusively with the sale of one farm product but expand to include a variety of products. In Denmark, the general practice was for one Co-operative Society to deal with one farm product and a farmer was a number of as many co-operatives as the number of products of his farms. The advantages of a single commodity co-operative are :—(1) Identity of interest of members, (2) the need for adequate resources, (3) ease of management, and (4) ease in allocating the cost of handling one commodity. On the other hand, if related products like fruits and vegetables are dealt with by the same co-operative society continuous marketing may be facilitated. If the seasons of the crops are different overhead charges per unit handled may be reduced and buyers may be better attracted.

Methods of paying the Farmer

There are three alternative methods of paying for farm products followed by co-operative societies, *viz.*, (1) paying the farmer cash on delivery of his products, (2) paying the farmer what his individual products are actually sold for, after deducting the charges made by co-operative societies, and (3) paying the farmer the net pool price after the products in the pool to which his products were added are sold.

The advantage of the first method is that it satisfies the farmer's need for immediate cash and falls in with the usual market practice. Its disadvantages are, on the other hand, (i) that the society assumes additional risks of price fluctuations, and (ii) the need for a large working capital, and a higher paid staff and also weakens the bond between the members and the society as soon as the price is paid.

The second method has the advantage of obtaining for the farmer the price which the quality of the product commands in the market, and of the society being able to work with a smaller capital, but it suffers from the disadvantages of the cost of the service to the farmer, the labour of book-keeping being increased.

The third method, *viz.*, pooling, spreads marketing risks, facilitates orderly marketing, and helps a society operating on a large scale, to play an important part in fixing and stabilizing prices but may encourage speculation and requires a highly paid manager.

In countries like Denmark, U.S.A. and Canada where co-operative marketing is most highly developed, the practice of outright purchases is rare and that of pooling and deferred payment common. Advance payments to relieve the farmer of his immediate need for cash are made under the deferred payment system, the amount of advance being a certain percentage of the Price Quotation Committees set up by Co-operative Societies.

A common feature of marketing societies is a contract for a certain period, with each member, binding to deliver his product, either all that he produces or a proportion based upon the advance which he takes from the society or the size of his farm. This has been found necessary in order to be assured of a sufficient volume of business of a period long enough to meet the expenses and establish the society and ensure the repayment of advances thus sustaining the credit of the farmer.

Working of Co-operative Marketing Societies

It has been possible to remove some defects of agricultural marketing in India by organising the work through co-operative societies. Thus co-operative marketing of agricultural products has made some progress in India. But before discussing the progress made in this sphere, let us see its pattern. Co-operative Marketing has the pyramidal form. At the bases there are the primary agricultural purchase and sale and production and sale societies and the primary non-agricultural purchase and sale and production and sale societies. Their area of operation may roughly be stated to correspond to a taluk. They buy and sell agricultural commodities and various other goods for the benefit of their members. The multipurpose co-operative societies also do the work of buying and selling in addition to other work. In 1953-54, there were in India 5,478 primary agricultural purchase and sale societies with a membership of 8.44 lakh persons which sold goods worth Rs. 12.08 crores. At the same time, there were

13,509 primary agricultural production and sale societies with a membership of 11·4 lakhs which sold goods worth Rs. 20·06 crores. There were 8·156 primary non-agricultural purchase and sale societies with a membership of 18·98 lakhs which sold goods worth Rs. 34·48 crores and 7,373 primary non-agricultural production and sale societies with a membership of 7·27 lakhs which sold goods worth Rs. 8·83 crores.

Above these primary societies, or say at the intermediate level, there are the Central Marketing Unions and Federations which generally operate over a part of a district or an entire district. They do the work of buying and selling and extend credit and other help to the primary societies. Their members are of two categories : (a) individuals, and (b) co-operative societies. In 1953-54 there were 2,130 Central Marketing Unions with a membership of nearly 16 lakh individuals and 40,363 societies which sold goods worth Rs. 27·57 crores. These Central societies had become very active during the war period when they handled much work but with a change in conditions and with the withdrawal of controls, the work has been reduced.

At the top these are the State (Provincial) Marketing Societies which are intended to serve as apex institutions for all the co-operative marketing societies operating in a State. They do the work of buying and selling and give credit and other facilities to the Central Unions or Federations and to the primary societies. They co-ordinate the work of Co-operative Marketing. The membership of these State Marketing Unions or Federations is also of two categories consisting of (a) individuals, and (b) societies. In 1953-54, there were 13 such Marketing Unions with a number of 1,462 individuals and 3,329 societies which sold goods worth Rs. 2·78 crores. Such State Marketing Unions or Federations have so far been established only in a few states and their work is limited in scope and not commensurate with the needs of co-operative marketing in India.

This structure, however, is neither so well knit nor so well developed as the co-operative credit structure, the unit at each level working more or less independently of those at other levels ; thus the lower units are not necessarily feeders of the higher units (and sometimes are not even affiliated to the latter) ; nor do higher units in all cases render any important service for the benefit of the lower units,

The progress of Co-operative Marketing Societies would be evident from the statement given below :—

Year	No.	Membership Individuals Societies		Paid-up share capital	(Rs. in Lakhs)	
					Loans issued during the year	Value of goods sold during the year
				Rs.	Rs.	Rs.
State Marketing Societies						
1947-48	6	891	1,054	1.89	...	16.76
1948-49	8	974	1,296	2.14	0.32	53.19
1949-50	10	1,059	2,020	9.57	409.31	115.20
1950-51	16	2,345	2,766	18.69	942.42	1,071.10
1951-52	17	2,603	3,623	32.00	540.42	1,457.51
1952-53	16	4,102	4,628	24.96	317.66	435.83
1953-54	16	2,870	3,679	25.30	267.13	342.00
1954-55	17	3,058	3,431	26.8	...	316.00
Marketing Unions and Federations						
1947-48	897	9,66,188	12,772	37.32	174.81	2,789.28
1948-49	1,619	10,90,589	28,785	68.91	447.78	3,361.86
1949-50	1,805	12,48,272	30,689	102.24	608.11	2,362.21
1950-51	1,904	13,52,299	31,771	122.06	841.47	5,668.36
1951-52	1,996	15,13,627	36,281	139.44	712.43	5,407.53
1952-53	20,54	15,56,229	38,615	156.46	376.26	3,317.26
1953-54	2,125	16,11,225	39,974	172.96	430.61	2,741.82
1954-55	2,233	16,90,159	44,513	201.00	...	4,179.00
Primary Societies						
1947-48	6,746	12,19,173	7,216	81.22	306.44	1,510.72
1948-49	7,618	13,38,057	8,013	168.41	439.52	3,037.25
1949-50	6,907	13,20,418	7,521	176.73	539.56	2,507.64
1950-51	7,355	11,22,767	6,988	199.46	657.95	2,998.76
1951-52	8,264	8,45,279	8,241	198.32	1,112.82	3,447.26
1952-53	8,816	9,07,484	7,415	194.65	861.23	2,606.40
1953-54	9,240	9,18,344	9,778	193.79	743.30	2,191.68

The statement shows that there has been considerable growth of co-operative marketing in India during recent years particularly in war and post-war period. World War II brought to limelight

the strength and vitality of the Marketing Co-operatives. The movement did not suffer after partition. In fact the unions and federations grew more rapidly in number and in membership after the independence of the country. Since 1947-48 the number of State Marketing Societies has been trebled and that of marketing unions and federations has gone up by more than 2 times. Financially, the organisations are also better off as would be evident from the amount of paid-up capital possessed by the different types of Marketing Societies.

It will be seen from the statement that the number of and membership of the Primary Marketing Societies have also shown a large increase since 1947-48. Their paid up capital has also increased by more than $2\frac{1}{2}$ times. Loans issued by societies to their members against produce have also shown a substantial rise in case of all these societies, *i.e.*, Primary Central Unions and the State Marketing Societies. The business handled by all of them has also considerably increased.

Progress in General

Though co-operative marketing societies form the most important group among the agricultural non-credit societies in India, their development and progress have not been very much. The following details reveal this fact :—

Apex Institutions

There is a great paucity of apex institutions which is the greatest weakness of the movement. In 1953-54 there were only 17 State (Provincial) marketing unions or federations in India of which six were in Madras, Bombay, Uttar Pradesh, Madhya Pradesh, Orissa and West Bengal and the remaining were one each in Mysore, PEPSU, Himachal Pradesh, Coorg; and two each in Hyderabad and Delhi. A large number of States had Central Marketing Unions or Federations. Out of the 2,130 such Unions or Federations Uttar Pradesh had the largest number, *i.e.*, 1,973; Bihar, 69; Rajasthan, 37; Saurashtra, 14; Bombay 12; Punjab, 6; H P, 4; Madras, V. P. and Coorg, 3 each; Andhra, Assam and Orissa, 2 each; Ajmer, West Bengal and Travancore-Cochin, 1 each. This shows that some of the States did not have a Central Marketing Union or Federations at all.

The apex institutions in the different States undertake all kinds of work depending on local requirements, *e.g.*, the Provincial Co-operative Marketing Society trades in fruits, vegetables, rationed articles, agricultural requisites, beaten gar and edible oils. It also distributes ammonium sulphate and conducts a Marketing Intelligence Service besides issuing a

monthly Bulletin. The Mysore Provincial Co-operative Society buys and sells manure, honey, goods made of Sandalwood, etc. The U. P. Co-operative Development and Marketing Federation distributes improved seeds, fertilisers, agricultural machinery, implements and runs the Ghee Testing and Grading Station at Shikohabad, markets herbs and provides finances to the Shellac industry at Windhawganj. The Orissa Provincial Marketing Society sells cottage industry products and minor forest products.

There are three main characteristics of the working of these apex institutions, *i.e.* :—

(a) The membership consists of both the individuals and the societies. In the case of the State (Provincial) Marketing Unions or Federations, the individual membership is nearly one-third of the total while in the case of the Central Marketing Union the Federations the individual membership is more than six times that of societies. This gives rise to a certain amount of instability in the movement ;

(b) The paid-up share capital and the owned funds of these unions or federations form a small proportion of the working capital thereby making their working unstable, and

(c) The cost of management in the case of these institutions especially in the case of Central Marketing Unions or Federations is too high.

It is necessary to remove these defects in order to make co-operative marketing more effective and economical.

Primary Marketing Societies

There are primary agricultural sale and purchase; and primary agricultural production and sale societies in many States. The number of the former in 1954-55 was 8,132 and that of the latter 9,352. In 1953-54, Mysore, H. P., Rajasthan, Madras and Andhra had more developed agricultural purchase and sale societies, their numbers being 1,460, 804, 538, 442 and 326 societies respectively; while U. P., Coorg, H. P. and Orissa were less developed with 7, 16, 22 and 23 societies.

In the matter of agricultural production and sale societies, Bihar, Madras, Andhra and Bengal had the lead, while Assam, Orissa and Rajasthan lagged behind.

The picture is slightly different in non-agricultural non-credit societies in which Assam, Bombay, Madras and M. P. had 1,281, 1,035, 755 and 581 purchase and sale societies respectively, while Bengal, Madras, Andhra and Bombay, Rajasthan had the lead in the production and sale societies with 1,409, 1,203, 833, 783 and 514 societies respectively. In non-agricultural non-credit societies U. P., H. P. and Coorg were weak.

The following table shows the working of Marketing Societies in India :—

	Purchase and sale societies			Agricultural. Production and sale societies		
	1952-53	1953-54	1954-55	1952-53	1953-54	1954-55
Nos.	11,455	5,478	4,150	12,310	13,509	14,184
Membership (in Lakhs)	11.40	8.44	6.99	10.04	11.14	12.09
Value of goods received	17.79	11.42	6.17	19.61	18.19	16.48
Value of goods sold	18.61	12.08	6.52	20.88	20.06	17.18
Paid-up share capital	2.11	8.00	1.43	2.05	2.12	2.03
Reserve and other funds	1.94	1.89	1.28	1.88	2.30	1.95
Working capital	6.82	6.28	6.57	8.53	10.02	8.48
Cost of management	0.68	0.47	0.27	0.78	0.72	0.67
Profit or loss	-0.33	-0.19	-0.15	-0.14	-0.01	-0.07
	Purchase and sale societies			Non-Agricultural Production and sale societies		
	1952-53	1953-54	1954-55	1952-53	1953-54	1954-55
Nos.	8,643	8,156	8,132	7,474	7,373	9,352
Membership (in Lakhs)		18.98	16.88	8.01	7.27	7.92
Value of goods received	48.20	29.41	15.71	11.10	6.77	11.72
Value of goods sold	51.15	34.48	16.19	12.51	8.83	13.43
Paid-up share capital	3.05	3.57	3.03	2.53	2.25	2.37
Reserve and other funds	3.30	3.85	3.47	3.41	2.76	2.72
Working capital	10.55	10.62	9.60	8.59	7.54	8.25
Cost of management	2.11	1.54	1.18	0.82	0.67	0.85
Profit or loss	-0.28	-0.41	-0.31	-0.70	-0.98	-0.68

These societies either themselves purchase the goods directly from the producers and sell them to the consumers or they act as agents to the producers thereby reducing the number of middlemen. Some of these societies run their own workshops and produce and sell the commodities. They also give credit facilities to the producers from whom they purchase the goods and thus their functions are wider than the mere marketing of commodities. They provide effective help in their production also. They deal either in one commodity or in many commodities. The multipurpose societies are also taking this work of marketing the agricultural produce and are found in many states. They do this work in addition to their other multifarious activities.

The primary agricultural purchase and sale and production and sale societies are also not fully developed. They handle only a limited amount of business. In comparison to these the non-agricultural purchase and sale societies do a larger amount of business. But in both the cases they suffer from the lack of funds, the paid-up capital being only one-third of the working capital. Costs of management are also very high. These also make the working of these societies unstable like those of the apex institution. In order to enable them to serve a useful purpose their working is to be reoriented.

Progress of Co-operative Marketing in some States

The development and progress of these societies have not been uniform throughout the country. No doubt the structure of co-operative marketing is undergoing a change and the new pattern that is being developed has been of the pyramidal form following the lines of credit structure, yet it presents a picture of uneven development as between various states. While they have made steady progress and taken firm root in Bombay, Uttar Pradesh and Madras and to a lesser extent in Mysore, Coorg and Bihar, such societies have yet to be organised in the states of Assam, Madhya Bharat and Bhopal. In Madhya Pradesh, Hyderabad and PEPSU, the societies have been mainly concerned with the distribution of controlled and rationed articles or the procurement of foodgrains and very little attention has been paid to the development of marketing in the strict sense of the term. In the States where progress is more marked, the movement is characterised by the working of a single commodity societies such as Cotton Sale Societies in Bombay, Sugarcane Societies in Uttar Pradesh and Bihar and Fruit-growers' Societies in Bombay, Coorg and Mysore. Ghee Societies in U. P. are also important. In Mysore the cardamom and coconut societies and in Coorg those dealing with honey, orange and cardamom are important.

The following statement shows the comparative position of the Co-operative Marketing Societies in various States in India. It clearly shows that there has been uneven development of such societies in the country¹ :—

Co-operative Marketing Societies in India, 1954-55

State	No. of Societies	No. of Members	Share Capital (in Lakhs)	Working Capital (in Lakhs)	Reserve and other funds (in Lakhs)	Turnover (in Lakhs)
Andhra	174	124,000	34.60	121.98	9.66	80.11
Bombay	358	167,358	67.90	511.32	126.29	1379.55
Bihar	71	7,753	3.69	78.07	22.85	365.93
Madras	114	129,810	9.73	82.65	72.38	265.33
West Bengal	199	22,633	1.52	17.43	7.15	19.97
Madhya Pradesh (1953-54)	82	40,004	12.43	N.A.	N.A.	N.A.
Orissa (1953-54)	84	17,893	1.24	N.A.	N.A.	N.A.
Punjab	48	44,220	27.12	38.83	2.40	205.01
U. P. (1953-54)	880	28,423	1.88	N.A.	N.A.	N.A.
Mysoire (1953-54)	85	19,832	3.99	27.05	N.A.	38.80
Travancore-Cochin	40	4,152	1.46	9.83	0.53	398.86

N. A. = Not Available.

Following is a brief account of the progress made by the Co-operative Marketing Societies in the states where the movement has made good progress :—

Madras

The progress of co-operative marketing in Madras has been significant. The marketing co-operative in the State have done efficient work and have achieved considerable success. There were 120 Primary Co-operative Marketing Societies in 1953-54 with a membership of 1,24,085 and a paid-up capital of Rs. 19.93. The Government utilised their services for distributing manures and implements in connection with the "Grow More Food"

1 I. L. O., *Recent Developments in Certain Aspects of Indian Economy*, III, 1956, p. 148.

scheme. According to the recommendations of the Co-operative Planning Committee, some of the societies purchase their members' produce for selling it into market or for export purposes. During 1953-54 they sold the produce worth Rs. 72.15 lakhs as owners and goods worth Rs. 132.97 lakhs as agents. In the same year they advanced loans to the members up to 44.72 lakhs and supplied seeds, manures and agricultural implements worth Rs. 45.24 lakhs to the members. The Government extends to these societies all the concessions given to stores societies engaged in similar work. These societies are financed chiefly by the Central Co-operative Banks. The marketing societies do not finance the cultivation of crops by their members but they lend on the pledge of produce. The following table shows the advances granted by the Central Banks to the marketing societies since 1949-50¹ :—

Year	(Rs. in Lakhs)	
	Cash Credit Rs.	Loans Rs.
1949-50	119.75	358.81
1950-51	106.68	351.77
1951-52	126.49	315.21
1953-54	46.68	...

Recently, the Government has fixed a maximum limit of Rs. 7,500 for payment of subsidies to marketing societies and of Rs. 5,000 to rural credit societies. The programme of construction of godowns financed by the grants and loans from the State Government is progressing at a fairly good pace. As on 30th June, 1952 there were 72 godowns owned by marketing societies in the State.

The scheme of controlled credit in Madras under which agricultural credit is linked to production and marketing of agricultural produce has also made appreciable progress in 19 circles in 1952-53. It aims at the production of particular crops by the cultivators with the loans advanced to them by the rural credit societies and then the produce being marketed through the sale societies. The rural societies are affiliated to the marketing societies and the loans issued by them are recoverable from the sale proceeds. Marketing Panchayatdars have been appointed for the quick collection and delivery of produce from the members to the societies.

Marketing of fruits and vegetables is also undertaken by Growers' Co-operative Societies. Milk societies have supplied substantial quantities of milk in Madras. The Madras Co-operative Milk Supply Union, Limited mobilizes the resources of the

¹ Figures up to 1951-52 relate to undivided Madras, those for 1953-54 relate to Madras (excluding Andhra).

primary societies for the ultimate benefit of the consumers. It possesses an excellent pasteurisation plant and its methods of business are highly efficient. A few marketing societies undertook cotton ginning and coffee and arecanut curing. Some marketing societies also export chillies, onions and English vegetables to Ceylon, Malaya, etc.

The Madras Provincial Marketing Society is the apex institution in the State which co-ordinates the activities of the other marketing organisations in the State.

Bombay

The progress of co-operative marketing in Bombay has been also appreciable. Co-operative Marketing Societies have been organised here on the single commodity basis and experience shows that they have worked much more efficiently than the multi-purpose co-operatives. There were 331 marketing societies in the State at the end of 1953-54, of which 86 were Cotton Sale Societies and 47 were Fruits and Vegetables Sale Societies, 2 tobacco sale societies, 13 cotton ginning and pressing societies, 179 District and Taluka purchase and sale unions and societies, etc. The membership of all types of marketing societies stood at 144,734 individuals and 5,647 societies. The working capital stood at Rs. 4.30 crores.

Advances are made by the societies to members against the security of their produce, largely out of the funds obtained for the purpose from the Central Financing Agencies in the State. In 1953-54, Rs. 377.0 lakhs were granted as loans.

In fact Bombay is the most advanced State so far as the supply of cotton through the co-operatives is concerned. About 16 per cent of the total cotton area in the State is under co-operatives. They have made considerable headway in Karnatak, Khandesh and Gujerat. Some of them also distribute cotton seeds. They also advance loans for the purchase of seed and cultivation of the crop. Auction sales are also conducted by these societies. They have also taken the task of classifying and grading cotton with the help of the Government which has given a great fillip to the movement. Outright purchases by the societies are on the increase as compared with sales effected on agency business. This helps the sellers in getting immediate payment for their produce but it also involves a measure of risk to the purchasing society.

In addition to these Cotton Sale Societies there were 13 ginning and pressing societies at the end of 1953-54 with a membership of 8,882 individuals and 92 societies individuals and

working capital of Rs. 55.95 lakhs. They have also made a rapid progress. Two sugar factories at Parwaranagar and Kopergaon societies are also run by co-operative of cane cultivators which receive substantial financial accommodation from the Industrial Financial Corporation and the Bombay State Co-operative Bank for the purchase of plant and equipment, construction of buildings. The State Government contributed Rs. 6 lakhs to its share capital. The society earned good net profit of Rs. 3.38 lakhs in 1953-54. Such processing activities are of utmost significance for the development of co-operative marketing.

Fruit and vegetable societies in the State pool and grade the members' produce according to quality and pack it on scientific lines before arranging for its sale. There were 47 such societies in 1953-54 with a membership of 13,854, individuals and 16 primary societies and their share capital and reserve and other funds amounted to Rs. 6.26 lakhs and Rs. 14.88 lakhs respectively. They have also done remarkable business. During 1953-54 they sold fruits and vegetables worth Rs. 94.64 lakhs, and earned a commission of Rs. 3.00 lakhs and a net profit of Rs. 0.67 lakh.

At the end of 1951-52, there were 7 federations of purchases and sale societies and multipurpose societies. They arrange for the supervision and audit of their affiliated societies. The State gives them financial assistance to meet their costs of management.

The Bombay State Co-operative Marketing Society is the apex marketing institution which was started in 1941 with the idea of co-ordinating the activities of the individual societies and also to operate as a central organisation in the co-operative marketing structure of the State. Since its establishment it has also shown steady progress. The society had a paid-up share capital of Rs. 1.31 lakhs reserves of Rs. 0.42 lakhs and a working capital of Rs. 6.55 lakhs as on 30th June, 1954. Its functions are : (a) to arrange for the marketing of members produce, (b) to distribute ammonium sulphate through co-operative societies for which it acts as sole distributor on behalf of the Government, (c) to provide marketing intelligence service and other miscellaneous services to its members. The Marketing Intelligence Division of the society issues monthly bulletins showing the prevailing market rates at the end of each week and also the average monthly rates of important agricultural produce.

It deals in fruits, vegetables, agricultural requisites such as oil-cakes, manure and sugar on its own account. The Society also supplies articles of domestic requirements like foodgrains, jaggery, sugar, etc. It also acted as an agent of the State Government under the "Grow More Food" scheme in supplying the manures, etc. During 1953-54, it sold plantains, coffee seeds, vegetables, fruits

and fertilizers value at Rs. 9.38 lakhs, earned a commission of Rs. 54,960 and incurred a loss of Rs. 37.2 thousand.

The Government of Bombay had assisted Co-operative Marketing Societies in the State in a variety of ways. The Government had placed the services of trained staff, free of cost in certain cases, at the disposal of these societies. Loans and subsidies are also granted for the construction of godowns and warehouses under Bombay Warehouse Act, 1947. Licensed warehouses are run by regulated markets and the co-operative marketing organisations. Licences are issued by the Government. With a view to promoting orderly marketing of agricultural produce in the State the Government have so far established regulated markets in as many as 78 centres and a representative of a local co-operative sale organization is appointed as one of the Government nominees on the market committees of these centres.

Thus co-operative marketing has made a steady progress in Bombay and if we take into account marketing co-operatives as a whole, we find that the membership of the provincial societies is the highest in Bombay. The business handled by them has been very substantial.

Uttar Pradesh

Co-operative Marketing Societies have achieved a considerable amount of success in Uttar Pradesh. This success is noted particularly in three categories of societies, *viz.*, the ordinary marketing societies, the ghee societies and the sugarcane societies. Most of the ordinary marketing societies have been converted into Block Unions with the Provincial Development and Marketing Federation as their apex organisation. The ghee unions come next having a large number of affiliated societies and then there are the sugarcane unions with their affiliated members. They are managed by the Cane Department. A separate controlling authority for the cane societies was necessitated by the fact that they constituted a very large and the most important part of Co-operative Marketing in Uttar Pradesh.

Co-operative Marketing in sugarcane is on the height of progress. The cane development and marketing unions supply 85 per cent to 99 per cent of the total cane requirements of the sugar factories. There is a cane union at the gate of every factory. At the end of 1953-54, the total number of such unions was 112 with a total membership of more than 14 lakhs. They supplied cane to the mills worth Rs. 36.69 crores. The working capital of the cane unions was Rs. 2.94 crores, their owned funds amounted to Rs. 2.08 crores. They earned commission of Rs. 67.97 lakhs. They also distributed 55,354 mds. of oilcakes, 3.19 lakh mds. of

chemical fertilizers, 2.10 lakhs mds. of fertilizer mixture and 11.8 thousand mds. of sanai seed for manuring.

They do not only ensure correct weighment and fair prices to the growers but also introduce improved methods of cultivation, popularise the use of improved cane and ensure regular supplies to the factories. For the success achieved by the cane co-operatives of Uttar Pradesh credit goes to the support they derived from the statutory compulsion which links sales by co-operatives to purchases by factories. The State has wide powers for the regulation of the distribution, sale and purchase of cane from several areas. The unions also undertake the sinking of new wells and repairing of old ones. They also construct roads to provide facilities for the easy transport of sugarcane from the fields to the factories. They also run schools and a few dispensaries and undertake other social welfare activities.

Next in importance to cane co-operatives are the ghee societies. There were 11 Central and 560 Primary Societies with a membership of 881 and 18 829 respectively. They are organised on the principle of one village one society. Any one having a cow or intending to do so can join the society. They purchase ghee from the members on a contract basis. They have been formed in the areas where ghee production is the most favourable. The ghee societies have federated into the central ghee unions which make arrangement for the collection and sale of the ghee of the societies and also co-ordinate their activities. The union maintains a laboratory for testing the ghee of the members and also a staff for the collection of ghee. Any member found guilty of adulteration is expelled from the membership or heavily fined. They sold ghee to the value of about 5 lakhs of rupees and the net profit amounted to Rs. 1.5 lakhs.

So far as trading, marketing and distribution activities are concerned the Uttar Pradesh Co-operative Development and Marketing Federation is the apex organization in the State. The main objects of the Federation are the promotion of production marketing and developments on a co-operative basis. District federations which are affiliated to the apex federation have been organized in all the districts in order take up such of those activities as are possible at the district level. The membership of Uttar Pradesh Co-operative Development and Marketing Federation is only limited to the District Co-operative Federations and District Co-operative Banks. It was established during World War II to ensue the equitable distribution of essential commodities but several other activities are also undertaken by the Federation such as the running of seed stores and of motor trucks, ghee trading, purchase of implements for societies, supply of finances to the district development federations. It has a very ambitious scheme to

expand its activities. It aims at undertaking the marketing of gur, potatoes, dry fruits, oil seeds, cottage industries products and the manufacture of implements, starting of oil and sugar mills and taking of export and import business. So far the Federation has been principally engaged with the distribution of commodities and no progress has been made in the sphere of the marketing of agricultural produce.

The district federations are also engaged in similar activities. The membership of a district federation consists of development or block unions, consumers' stores, and some of the large co-operative societies situated within its area of the operation. The total number of block unions was 1,666 in the State in 1951-52. They distribute seeds amongst the members. Most of the unions also handle the distribution of other commodities like sugar, salt, kerosene oil, etc.

Achievement of Co-operative Marketing

The Co-operative Marketing Societies have removed many defects of agricultural marketing in India :—

(a) *Reduction in the Cost of Marketing* These societies directly purchase goods from the producers, thereby eliminating a large number of middlemen who eat away the profits in agriculture. The Co-operative Marketing Societies in India have brought a reduction of the middlemen to some extent in the parts where they have been formed.

(b) *Provide finance.* These societies also advance loans to the producers thereby saving them from the clutches and fraudulent practices of traders. The cultivators are also saved from botheration of arranging for the sales of their produce. The Co-operative Marketing Societies also give them expert advice in the matter of production. The Co-operative Marketing Societies in India also have done some work in this respect also. They have done much for the development of Cottage Industries by organising the sale of their products efficiently and at cheaper cost.

(c) *Supply of good quality of goods to consumers.* The consumers have also been benefited by these societies. They get better quality goods which are properly graded and tested by these societies. These societies help in the production of better quality of goods and in checking adulteration. The Ghee Societies and the Co-operative Milk Unions in India have achieved much success in this direction.

(d) They have also been able to teach the cultivators the principles of co-operation to some extent.

Still the movement is in infancy and they have to serve a useful purpose in the future. Following are the difficulties which have largely contributed to the slow progress of the Co-operative Marketing Societies in India :—

- (a) The absence of adequate and expert technical advice.
- (b) Difficulties of providing the marketing finance.
- (c) Lack of business ability among co-operative officials.
- (d) The absence of adequate storage facilities.
- (e) Lack of upto-date or day-to-day knowledge of market rates and prices.
- (f) Inadequate transport facilities.
- (g) Absence of regulated markets and the activities of the middlemen.
- (h) Competition by the merchants.
- (i) Absence of loyalty among the members.

Suggestions for Improvement of Co-operative Marketing Societies

(1) The organisation of a Co-operative Marketing Society must be on democratic lines. Every one should have an equal voice in its management and there should be no discrimination between the members.

(2) Persons having common interests should combine together for forming a Co-operative Sale Society. The aim should be to raise their economic life with sincere efforts by combining together in this way. In order to enable the persons to understand the working and significance of a co-operative organisation, what is necessary, is propaganda and publicity. The members should also be educated. Experience has shown in the foreign countries that education of the members, propaganda and publicity are the real instruments for the success in Co-operative Marketing Organisations.

(3) The area of operation of a Co-operative Sale Society must be a large one so that they may have sufficient business to handle. They work on a small commission and so unless business is large these societies cannot function successfully.

(4) Co-operative Sale Societies are bound to bear fruit in the regions where the small producers are in the grip of the middlemen who are exploiting them fully provided they are established on healthy lines.

(5) The members of the society should not expect much more than the reasonable limits set by the forces of demand and supply, as they are not monopolistic concerns. They in a way bring a

happy end of the superfluous middlemen and prove beneficial to the members.

(6) Co-operative Sale Societies are limited in their scope up to small scale and medium scale of production. It is a weapon only for the weak individuals. The farmers and the cottage workers find a good scope under such organisation.

(7) Co-operative Sale Societies should not merely function as sale societies. They can achieve greater success if they take up other work also allied with it such as supply of agricultural and domestic requirements of the members. This will lower down the cost of management and widen the scope of their success. In a few States of India it has been done with great success such as in Bombay. Co-operative Cotton Sale Societies have also taken up the work of ginning. Cane societies in U. P. and Bihar can also take the manufacture of gur, etc. Margin of profits increases substantially by such a combination of functions.

(8) The Co-operative Societies must have proper pooling and storage facilities in order to spread the sales over the entire period of demand which is in the interest of both the producers and the consumers. In the absence of storage facilities, the societies will have to sell the entire produce at the time of harvest, which would further weaken their position. Construction of godowns is further necessary because the cultivators cannot afford to wait and want cash payment for their produce immediately. If the societies sell the produce immediately it will not fetch good prices. On the security of stored crops loans can be raised and part payment may be given to the cultivators. But the construction of storehouses requires huge expenditure. The Government and the higher federations should subsidise their construction.

(9) Grading and standardisation of the produce is also to be paid special attention by the Marketing Societies as they have got great significance in the marketing of agricultural products.

(10) There should be greater co-ordination between the marketing, farming and credit societies for the success of different types of co-operative organisations.

(11) The organisation of higher federations for marketing of agricultural product is of great importance. They have played an important part in the advancement of co-operation in foreign countries. They are in a better position to carry on the work of publicity, propaganda, etc. They also can give better guidance to the lower organisations.

(12) They should have a fully trained and experienced staff knowing the technique of marketing and production which is of great significance in improving efficiency of the entire organisation.

(13) The Government should also give a direct assistance to the movement which should be not only in the form of financial aid but also in the form of help in administration and supervision. The movement is considerably strengthened by such help from the Government as we have seen in the case of cane societies in Uttar Pradesh.

(14) Single purpose societies are better suited in the case of those commodities which require specialised knowledge and technique. Such societies have worked well in a few States in our country, *i.e.*, cane societies in U. P. and cotton societies in Bombay, etc.

Suggestions of the Conference on Marketing and Co-operation

The Conference of Marketing and Co-operation (1956) has suggested the following measures for the improvement of co-operative marketing in the country :—

1. Since the larger-sized primary agricultural credit societies will in future be giving production loans on a much larger scale and as such loans will be recovered mainly through co-operative marketing societies, it will be necessary to organise co-operative marketing societies hand-in-hand with credit societies and in some cases even in advance of them. The plans of the State Government in the first two years of the Second Five Year Plan period should, therefore, provide for the setting up or reorganisation of as many co-operative marketing societies as may be possible. These marketing societies will not only help organised selling and recovery of loans granted by co-operative credit societies but will also supply seeds, fertilizers and other production requisites to credit societies.

2. For carrying out the activities of the primary marketing and larger-sized credit societies effectively the following division of functions between them should be adopted :—

(i) the credit society will be responsible for giving production loans in cash or in kind, including production requisites such as seeds, fertilizers, implements, etc., valued in cash ;

(ii) the marketing society, on the other hand, will generally confine its activities to the giving of loans on the pledge of agricultural produce delivered to it for sale ; in special cases it might also make outright purchases, which should be kept as low as possible ; it will also act as a recovering agent of the credit co-operative in respect of production loans advanced by the latter. Although, as a general rule, the marketing society will not provide production credit to its members, the State Government may, for special reasons permit it to do so in exceptional cases ;

(iii) the credit society will not itself undertake marketing, but may collect the produce on behalf of the marketing society and even store it temporarily until it is sent to the marketing society. It may also grant temporary financial accommodation to its members against stocks held ;

(iv) specific arrangements should be made, either by agreement or by legislation, to ensure that every agriculturist member who takes a production loan from the credit society, sells his produce through the marketing society, to which the credit society is affiliated.

3. While steps should be taken for the construction of godowns for the marketing societies as early as possible, it may be necessary for these societies to hire godowns until their construction is completed. In order to enable the marketing societies and larger-sized credit societies to hire godowns, a subsidy up to 50% of the rent of the godown for the first year of the hiring of such godown may be given and this should be shared equally between the Central and State Governments. Government may also release to them such godowns from the Food Department as can be spared. In the meanwhile, requirements of iron and steel and cement may be ascertained by the State Governments and communicated to the Government of India, Ministry of Food and Agriculture, who should arrange for a high priority for their supply.

4. Suitable designs for godown construction for various commodities should be prepared by the Government of India and provided to co-operative societies through State Government.

5. Marketing co-operatives should devote special attention to the major agricultural commodities of the area to start with. This should not, however, preclude them from undertaking the marketing of other crops delivered to them.

6. Proper co-ordination of functions between the primary marketing societies and similar organisations at higher levels should be evolved. In order to promote this co-ordination, the primary marketing societies should send prescribed returns to the apex society or federation giving information about local sales, prices, arrivals, stocks, volume of trade handled by them, etc., and the apex bodies should, in turn, actively assist the primary societies in arranging sales in favourable markets.

7. The structure of co-operative marketing organisation may normally consist of two tiers, namely, the primary and the apex body. As far as possible, apex marketing co-operative societies should be organised along with primary marketing societies so that

arrangements for the supply of production requisites such as fertilizers, seeds, etc., may be facilitated. If, however, the Governments consider an intermediate federation of primary marketing societies necessary for any particular region, this may be allowed.

8. The membership of primary marketing societies should consist of agricultural producers, including agricultural credit societies. A trader even if he is an agriculturist, but who deals in the same line of commodities in which the marketing society deals should not be allowed to become a member.

9. While selecting a centre for the organisation of a co-operative marketing society it should be seen that it is located at or as near as possible to a mandi which is also close to a railway station, a main road or a waterway.

Marketing Finance

1. The minimum share capital of a primary marketing society should generally be not less than Rs. 20,000, but every effort should be made to increase this share capital to at least Rs. 50,000 as quickly as possible. The maximum credit limit for such a society should ordinarily be eight times its owned capital. This credit limit may be relaxed wherever special conditions warrant. The society can also borrow from a bank on the pledge of produce.

2. It is necessary to make marketing finance available to the agriculturist at as low a rate as possible, and in any case not exceeding the rate at which production credit is made available to him. Loans required for making contributions to the share capital of marketing societies and for the construction of godowns of marketing and large-sized credit societies should be made available by the Central Government at the same rate at which loans are given by the Reserve Bank to enable the State Governments to participate in the share capital of co-operative credit institutions.

3. The co-operative marketing societies should normally obtain financial accommodation from the Central Co-operative Banks only. In case where the Central Banks and the Apex Banks cannot provide requisite finance the Registrar of Co-operative Societies may permit a marketing society to obtain the necessary accommodation from the State Bank of India or any other commercial bank.

4. Since a large part of marketing finance will have to be obtained from the Central Banks as cheaply as possible, it is necessary to strengthen the Central Banks. With that end in view steps should be taken immediately to amalgamate existing small and uneconomic banking units.

Processing

1. In view of the fact that processing of agricultural produce is an important adjunct to marketing for ensuring the maximum return to the producer, it is necessary that a workable method of financing co-operative processing societies should be devised. The following formula would suit the purpose :—

Block Capital :—

- (i) Member share capital—20 to 25%.
- (ii) Government share capital—20 to 25%.
- (iii) Loans from financial Corporations—50 to 60%.

Working Capital :

Loans from Co-operative Financing Banks.

Co-operative Marketing Societies under the Second Plan

A provision has been made under the plan for organising more than 10,000 large-sized credit societies and 1,900 marketing societies during the plan period. The Second Conference on Co-operation (1956) decided that in 1956-57, 1,715 credit societies should be set up ; in 1957-58, 2,684 ; in 1958-59 3,600 ; and in 1960-61, 2,401. The Conference also decided to set up ; 500 Co-operative Marketing Societies in four years—318 in 1956-57 ; 471 in 1957-58 ; 600 in 1958-59 and 411 in 1959-60.

BOOK THREE

LAND REFORMS AND POLICIES

25. Land Tenures.
26. Land Revenue Policy.
27. Land Reforms.
28. Land Reforms (contd.)
29. Agricultural Policy and the Government.
30. Planning in Agriculture.

CHAPTER 25

LAND TENURES

In the discussion of the causes of low productivity in agriculture it has been noted that the system under which land is owned and cultivated in India is also an important contributing factor. There are two allied problems : (i) the problem of land tenure, *i.e.* the legal or customary system under which land is owned, and (ii) the problem of land tenancy, *i.e.* the system under which land is actually cultivated and the product divided between the owner and the cultivator. In a study of the systems of land tenure, we discuss mainly the question of ownership, sale or mortgage of land and how far these rights are recognized by law or custom. Land tenancy is concerned with the study of the question of security under which cultivators hold land and of the division of the product.

The importance of a study of the system of land tenure will be obvious from the quotation from Land Reforms. "The land tenure system may reduce the standard of living of the peasant by imposing on him exorbitant rents or high interest rates ; it may deny him the incentive or the opportunity to advance and it may check investment because it offers him no security. It may lead to the prevalence of farms which are too small to be efficient units of production or too large to cultivate intensively."¹

The importance of the study of Land Tenure is usually threefold.

Firstly, it is necessary from the point of view of the State, to locate the owner of land because it is he from whom the State has to claim the land revenue.

Secondly, the effects of the system of land tenure are very far-reaching on the productivity of land. For example, an owner cultivates his land with greater zeal and is more anxious to introduce permanent improvements into it than a tenant who has to share the fruits of his labour with an absentee landlord.

Thirdly, the social organization of a country depends on its land tenure system because it determines the village institutions. It also determines the standard of living of the masses.

1. U. N. O. : *Land Reforms—Defect in Agrarian Structure as Obstacles to Economic Development*, 1951, p. 5.

Early History of the Evolution of Land Tenures in India

From the very early times the State in India claimed a share of the produce of the soil from the cultivators. In the Hindu period the land belonged to the village community and was never regarded as the property of the king. The king had a traditional or customary right of having one-sixth portion of the gross produce, i.e., of the grain heap on the threshing floor which in times of emergency was raised to one-fourth. Thus the demand of the State varied automatically with the outturn and no elaborate system of suspensions and remissions of the revenue was necessary. The State, however, had merely a right to a share always in kind. But this proved disadvantageous from the point of view of the cultivators as the whole crop had to be kept rotting on the ground till the officers of the king came to supervise the division. Hence, this inconvenience gave place eventually to the payment in money, a development hastened by the rapid progress of some of the Muslim kingdoms which rendered collection in kind under the old system unworkable. First systematic attempt at computing the State's share of the produce in money was made by Timur and later by Sher Shah until the systematic settlement was made under Akbar by his finance minister, Todar Mall, when a more detailed and systematic enquiry into the taxable capacity of the different kinds of soils was undertaken as a necessary preliminary to fix the land revenue demand and the Government's share was fixed at one-third of the gross produce. Land revenue was fixed for a period of years payable in cash. To collect the revenue in a regular manner headmen or tax-farmers were appointed. Often the right of collecting land revenue for a pargana or district was sold out by public auction to the highest bidders who were held responsible for the payment of amount thus fixed in one lump sum into the Government treasury, retaining for themselves any surplus over it. These tax farmers squeezed out of the cultivators as much as possible and paid to the Government as little as they could. In some cases the Hindu chieftains or rajahs subdued by the Mughals were made the revenue farmers under the Imperial Warrant. Although at first the office of the tax-farmers was not hereditary and was subject to the supervision of the State officials, it tended to be so as the control of the central authority weakened. Thus by the middle of the 17th century zamindars, assignees and farmers of land taxes had greatly strengthened their position. They consolidated their positions by bringing wasteland under cultivation as their own land by buying up the small farmers.

When the East India Company acquired political control in one part of the country after another, they took over the traditional system ; but the whole character of land system was transformed by them through the introduction of the British

concepts in India. It was assumed that the State was the supreme landlord. In the place of the traditional share of the Government in the produce paid by the village commodities as a whole there was introduced a system of fixed payments in cash assessed on land which had no reference to the good or bad harvest. In most cases the assessment was individual whether levied directly on the cultivator or on landlords appointed by the State. In 1793, Lord Cornwallis gave the revenue farmers the proprietary rights over their estates in return for their agreeing to pay a fixed amount as land revenue to the British. The result of this agreement was that the zamindars who were merely collectors of land revenue were converted into landlord and the original cultivators were reduced to the position of tenants. Thus between the cultivating holder and the government a third party with an interest in land had grown up in zamindari areas. In most parts of Bengal sub-infeudation had been created. When the estate was too big, the zamindar would hand over a part of it on lease to a tenure holder. In such adjustment there have been four interests in land which may intervene between the cultivator and the Government, as will be clear from the table given by Baden Powell¹ :—

One Interest	Two Interests	Three Interests	Four Interests	
1. The Government is sole proprietor, i.e., <i>State Landlordism</i>	1. Government. 2. The Ryot or occupant with defined title (not a tenant) as in Madras or Bombay, i.e., <i>Ryotwari system</i>	1. Government 2. Landlord zamindar, Talukdar, or a joint village body regarded as a whole. 3. Actual cultivating holders, individual, co-sharer; i.e., <i>zamindari system</i>	1. Government 2. Landlord 3. Sub-proprietor or tenant holders 4. Ryot or cultivating holder	1. Government. 2. Landlord 3. Actual proprietor or landlord 4. Actual cultivating holders; individual co-sharer, i.e., <i>Mahalwari system</i>

The land revenue was considered as a rent rather than a tax. Under British rule, the system of assessment and collection of revenue has varied according to the varying circumstances of different States and to suit administrative convenience. So that now the system of land tenure in India exhibits almost every conceivable variation from immense estates containing thousands of tenants to minute holding of well under an acre in size.

In Bengal and parts of Madras the zamindar and a number of sub-proprietors below him intervene between the Government and the cultivating holder; in parts of U. P., there are the groups of co-sharers or village communities claiming collectively to be the landlords of the estate, and collecting revenue from the cultivating

¹ Baden Powell, *Land Revenue and British India*, p. 129.

holders whom they regard as their tenants. There are in Oudh persons known as talukdars claiming proprietary rights over these joint villages.

Thus it will be evident that "Indian tenures are largely the results of changes and growths, the fruits of wars and incursions, tribal and local conquests or usurpations and of the rise and fall of the ruling families; the right by conquest or birthright supervenes upon the right by first clearing." All rights of ownership in land in India rests on two basis, *i.e.*, the right of first clearance and the inheritance right which originates in grants, conquests or natural superiority.¹ The right of clearance is the right of the individual holder which arises from the fact that he was the first to occupy the plot of land and bring it under cultivation. This is still essentially the basis of ryotwari holding and the privileged position claimed by the cultivating holders who have been reduced to the position of tenants under landlords in zamindari and other landlord estates.

In India it has been a long practice for the rulers to make grants of villages to their dependants and the grantee was entitled to the State's share of the produce. But the grantees by bringing wasteland under the plough, and by buying up poorer landholders claimed to be the landlords of the whole village and in course of years succeeded in making the cultivators forget that they had independent rights. So that now the descendants of the grantees hold the village jointly while the cultivating landholders have sunk to the position of the tenants with some special occupancy privileges. Above these joint villages another right has grown up in U. P. In Agra the Rajahs, who had been employed as revenue farmers by the kingdom, had required certain rights over a number of such villages by the time the province came under British rule. In these cases the village owners have been recognised by the British Government as actual proprietors and the land revenue settlement has been made with them; but a sort of overlordship or talukdari interest over them has been assigned to the talukdar who are paid 10% of the land revenue raised from the villages as talukdari allowance. The talukdars of Oudh also originated in this way.

Thus in India, over the right to land which is created by first clearance, a number of other rights have grown up—rights which originate in conquest, grant of natural superiority. Enterprising revenue farmers and State officials have risen and ruling chiefs have sunk to the position of landlords. Rights of this kind (inheritance right) reside either in one landlord or in a body of co-sharers having overlordship over a village or a large estate. To quote

¹ Baden Powell, *Land Revenue and Its Administration in India*, p. 122.

Baden Powell, "Claims grew, one set of rights were superimposed upon another, and in many cases—as in zamindari areas of Bengal and in the talukdari estates of Oudh—various grades of rights in land are found to co-exist."

The fundamental facts that emerge from the above analysis are :—

(i) That the legal basis for the present system of land ownership was conferred by the British Government solely with reference to the canons of taxation, of maximisation of revenue and convenience in collection and not with reference to the ascertained or proved rights in land of various categories of occupants or cultivators or landlords with whom settlements were made.

(ii) That the principles of British jurisprudence were foisted on the native land system, and

(iii) Four main types of land systems were recognised, giving rise to a chain of problems of economic and social importance.

Types of Land Tenure

Land tenures in India may be defined as the system of rights and responsibilities of individuals owning or cultivating the land, vis-a-vis the State, regarding the payment of revenue. The type of tenure determines the person or persons responsible for the payment of land revenue, the various gradations of interest and rights in land, their recognition and interrelation and the nature of the unit of assessment adopted.

The principal systems of land tenure in India may be classified on two basis : Firstly, on the basis of the relation between the holder and the Government. Under this classification falls three main types of tenures : Zamindari, the Mahalwari and the Ryotwari. Secondly, on the basis of duration of the tenure as Permanent and the Temporary.¹

(i) The Zamindari system (or landlord tenure) makes the zamindar the holder of all lands from the Government. He is made

¹ According to figures of 1937-38, the area under the three main types of land tenures was distributed as follows :—

Kind of tenure	Area in Millio- Acres	Percentage to Total	Main Provinces where it prevails
Ryotwari	183·0	26% ₀	Madras, Bombay, Assam and Sind (Pakistan)
Zamindari (permanent Settlement)	129·7	25% ₀	Bengal, Bihar, Madras and Orissa
Zamindari and Mahal- wari (Temporary Settlement)	197·2	39% ₀	M. P., U. P., Punjab

(Vide, Ministry of Information and Broadcasting, *Agriculture in India*, 1950, p 51).

responsible for the payment of the land revenue on the whole estate, the land being cultivated by the tenants. The estate varies in size from half a district to a few acres and the revenue is assessed in a lump sum on the whole estate. The zamindar is vested with a distinctly proprietary or landlord character. Tenant farming is the general rule under such system.

(ii) The *Mahalwari* system (or joint village tenure) makes the co-sharing bodies or village communities the holder of the land, the members of which are treated as jointly or severally liable for the land revenue due to the Government. Here the estates are smaller ranging from one village to parts of two or more villages. Under this system the cultivation is usually done by a class of tenants in U. P. but in the Punjab often the owners themselves cultivate the land.

(iii) Under the *Ryotwari* system (or peasant proprietor tenure) the land is held directly by the ryot or occupant, who is in most cases individually responsible to the Government for the land revenue. In such system the owner farming is the rule though of late owners have begun to let out the land to tenants-at-will.

(iv) *Jagirdari* and *Inam* system is mostly found in M. P ; Rajasthan, Saurashtra Hyderabad and in some areas in Madras and W. Bengal. Under these settlements, the *Jagirdars* and *Inamdars* are given the right to collect rent from the actual occupants of the land, but they have neither the right to hold or manage or cultivate the lands vested in them. The rental assets of the estates were assigned to them in recognition of specific services rendered or to be rendered by them to the State or the community.

Despite the diversity of the settlement system "they are all alike in three respects. *Firstly*, the process of assessment is always preceded by the preparation of a survey map and record of rights. *Secondly*, a soil classification is always made; and *thirdly*, the assessment is no longer based on the gross produce but on the net assets."

Zamindari settlement is ordinarily known as the Permanent Settlement though there is another type known as the Temporary Zamindari. Where the share of the State is fixed in perpetuity it is called a Permanent Settlement and where it is fixed temporarily for a definite period, it is called a Temporary Settlement.

According to the Land Revenue Statistics (1947-48)—latest available—in Part 'A' States 96 million acres, *i.e.*, 24% are covered by the Permanent Settlement, and 154 million acres or 38% by Temporary Zamindari Settlement. Thus the *Zamindari* tenure

covers 62% of land, and the remaining 153 million acres or 38% are under *Ryotwari* system. The Permanent Settlement extends over W. Bengal, parts of U. P., the States of Bihar, Orissa, Madras, Assam and M. P. The Temporary Settlement is generally met with in parts of U. P. M. P., West Bengal, Orissa and Bombay. A variant of Temporary Zamindari established in M. P. is known as *Malguzari* under which system the *malguzars* or patels (who were formerly tax farmers under the Marathas) were now regarded as proprietors. In U. P. and the Punjab the *Mahalwari* tenure is generally the rule.

The period of settlement, like the system of tenure, shows variations from one part of the country to the other. Large parts are under the Permanent Settlement, introduced first in Bengal by Lord Cornwallis in 1793 which system was later on extended to other parts also. But it was found to be defective as it meant a loss of revenue to the Government; it led to rack-renting and feudalism of tenants. Hence, it was decided to make settlements in other areas on a temporary basis. Thus the settlement is revised every 20 years in M. P. 30 years in Bombay, Madras and U. P. and 40 years in the Punjab.

Under the revised procedure for assessment and collection of land revenue, the types of land tenures have been grouped under three heads: (i) *Ryotwari*; (ii) *Zamindari* (permanently settled), and (iii) *Zamindari* (temporarily settled).

The Ryotwari System

This system was first introduced in the districts of Bara-mahal, (Madras) by Captain Read and Thomas Munro in 1792 and was gradually extended to other parts of the province and thereafter to Bombay. It now prevails in Bombay, in most of Madras, in Coorg and Assam. Although originally the ryot was the actual cultivator there are now many non-cultivating or absentee ryots.

The *Ryotwari* tenure is characterised by the following principal features:

1. Under this system the ryot or the landholder is recognised as holding the land directly from the Government without the intervention of any intermediaries. His tenure is known as the '*Occupancy Tenure*.' But the ownership of all land including the wasteland lies in the State.

2. The holder of the land is a mere occupant and as such has the right to use, transfer, sell, mortgage or otherwise dispose of the land. He holds the land in perpetuity so long as he pays the land revenue to the State, and hence he cannot be ejected by the Government so long as he pays the fixed assessment.

3. The occupant has a right to resign any field or fields at his option. He can thus contract the area held by him by resignation or extend it by purchase in accordance with the state of his resources.

4. The occupant can lease a portion or the whole of his holding on annual tenancy at a rent agreed upon with the tenant. The tenant under the ryot has no statutory rights. He has no permanent interest in the land he cultivates. If the tenant sows improved seeds or puts in good manure or extra labour to improve the land he has no guarantee that he will get an extra return for his labour and enterprise. The absentee ryot cares only for the rent and takes no interest in the improvement of land.

5. If the Government sell the holding of the ryot for arrears, land revenue and of takavi loans the purchaser has a clean title, the sale conveying the land free of all encumbrances.

6. The assessment is a charge upon the crop and the arrears of previous years a first charge on the holding. The revenue is regarded as a rent and not as a tax. Every holder is individually responsible for the payment of the land revenue. The assessment is fixed for a period of 20 to 30 years and is periodically revised under a survey settlement.

There are two kinds of *Ryotwari* holdings: (i) Those in which each individual occupant holds directly from Government, and (ii) those in which the land is held by the village communities, the heads of the village being responsible for the payment of revenue of the whole village area. In Bombay, Assam and Madras the *Ryotwari* tenure is on the individual basis.

The individual being directly assessed, the village community lost its economic function. The peasant was given a proprietary right in the land which now became saleable and mortgageable for cash. This happened at a time when price economy was fixed on the basis of land and not variable according to the yearly produce, payable in cash at fixed periods. As a cumulative effect of all these factors, the importance of the moneylender in the rural economy was increased.

The main advantage claimed for this system is (i) that there is no sub-infeudation and the cultivator is in direct relation with the Government, (ii) there are no intermediaries. But this system suffers from certain defects too: (i) The land in these areas is passing into the hands of non-agriculturists and the number of the landless labourers is increasing and the size of holdings going smaller and smaller. (ii) It is also defective in the methods of assessment of land revenue. It leaves too much to the Settlement Officer whose estimates are based on mere guess work. (iii) The

individual assessment has destroyed the collective basis of village life and has led to the decay of the village community.

The Mahalwari System

This system was first adopted in Agra and Oudh and was later extended to the Punjab. Under this system a body of co-sharers, usually of common descent, claim jointly to be in the ownership of the entire village area. In these joint villages the whole estate (which is known as 'Mahal') is assessed to one sum of land revenue. The co-sharers are jointly and severally liable for its payment. In the ancestral villages each co-sharer pays a proportion of the land revenue exactly corresponding to the fractional share of the estate, while in the non-ancestral villages the amount each co-sharer has to pay is proportionate to the actual holding. Such tenure prevails in the Punjab and U. P.

Whether these co-sharers themselves cultivate the land, or they have below them a class of tenants, depends upon the way in which the joint village has originated. If the body of the co-sharers (as in U. P.) has grown up over an already existing village, the original cultivators would have sunk to the level of the tenant paying rent to the co-sharers who divide the amount so collected among themselves. If the proprietary body belongs to a superior or a military class (as in the Punjab and U. P.) the cultivation is carried on by the tenant and not by the co-sharers. But when the village has been established on a new soil by a co-operative colonizing group or by an active and energetic conquering tribe whose descendants are at present the joint owners of the village, the co-sharers may themselves work on the land with the help of their families. But here also tenants may be found.

In a joint village the wasteland belongs to the co-sharers and not the Government. The co-sharers may let it out on rent to tenants and divide the rent among themselves and bring it under cultivation. Each co-sharing body has its own special holding or home farm better known as Sir land. It is the private property of the co-sharing landowner and no one can claim to have been its owner in the past. We hear less of Sir land in the Punjab because here the co-sharers themselves cultivate the land, and usually there are no tenants who hold from them. The Sir land is important in U. P. and M. P.

The co-sharing families in the joint village share the land or its yield according to one of the three principles :

(i) The first is the ancestral or family share system. Each of the co-sharing families get a fraction of the whole, determined by its place in the genealogical tree. Among these ancestral villages

themselves there are three distinct varieties : (a) The present body of the joint owners might hold the whole estate undivided (as in the case of a joint undivided family), *viz.*, Zamindari mustarkas ; (b) Or, the co-sharing families might agree to partition of the estate among themselves on the ancestral principal, *viz.*, Pattidari ; (c) Or the co-sharers might divide only part of the estate, leaving the waste and the area cultivated by the occupancy tenants undivided, *viz.*, imperfect pattidari. In the case of joint villages held on the ancestral system, the present body of proprietors are descendants of a common ancestor who acquired landlord rights over the estate.

(ii) The second system is adopted in the non-ancestral villages which have been established by colonisation or conquering groups, and villages which have forgotten all remembrances of ancestral shares. Here the land is shared by the co-sharers in (a) equal lots made up artificially of various types of land (from good and bad land in the village) ; or (b) according to the number of ploughs owned ; or (c) with reference to share in water ; or (d) share in well.

(iii) There is a system of *de facto* holdings. In villages which follow this principle there is no sharing. Nothing but a *de facto* holding is recognised. This may be due to the fact that originally when the village was established land was abundant and each family took what it wanted or had the ability to cultivate or to the gradual decay of an earlier system of definite shares.¹

The Zamindari System

This system is mainly the result of the reluctance of the British, during the early days of their rule in India, to deal directly with the cultivating holders for the collection of land revenue. When parts of India gradually began to pass under British rule, the British administrators were faced with the problem of making arrangements for the collection of land revenue. Numerous factors made them prefer dealing with the ryots through middlemen. *Firstly*, the task of surveying and assessing the small holdings of millions of cultivators, and of collecting the land revenue from them must have naturally appeared to them a gigantic and formidable one, and *secondly*, the complex administrative machinery needed for this purpose had not yet been built up. Combined with this natural disinclination to deal directly with the ryots were the idea of landlord and tenant to which they had been accustomed in England, and they appear to have proceeded on the basis that the cultivators must hold their lands from one landlord. This made them extremely willing to recognise some one person as the landlord of an estate and thus make him responsible for the payment of land

¹ Based on Baden Powell, *Land Revenue and Its Administration in Br. India*, pp. 76-87.

revenue levied on the estate as a whole. So the British were anxious to find suitable persons, *i.e.*, the zamindars and the various revenue or tax farmers or revenue-collecting officers of the Mughals, who were though in reality the landholders and not the proprietors having any proprietary rights in the soil but had strengthened their position during the disturbed days that followed the break-up of the Mughal Empire and now claimed to be landlords, came in very handy. The British now recognised them as landlords and they in turn agreed to pay a stipulated amount as land revenue on their estates. Thus according to Sir Richard Temple the Permanent Settlement in Bengal was "a measure which was effected to naturalise the landed institutions of England among the natives of Bengal."¹ "Thus the zamindars who were originally either the local chiefs, Rajas or other grantees or the agents of Government and, therefore, under the supervision of the Government were declared full proprietors of the areas over which their revenue collection extended. The assessment was fixed at about 10/11ths of what the zamindar received as rent from ryots, the balance of 1/11th constituting the zamindar's remuneration. The revenue liability was fixed in a rough and ready manner without any survey of landed rights, and interests or any investigation into the productive capacity of the different classes of soils. The intention of protecting the tenants as well was never made effective. The landlords became a functionless parasitic class interested in getting the maximum rent from the peasants and Cornwallis' dream of creating in Bengal a beneficent landlord capitalist system resting on the contentment of the cultivator failed to materialise."²

In thus hastily recognising the claims of zamindars and other revenue farmers to proprietary rights, the British sacrificed the interest of the millions of cultivating ryots. Those who were the real proprietors of the land they cultivated now sank to the position of tenants holding their lands from the zamindar. The inevitable result was the creation of absentee landlords and degradation of the original holders to a position of semi-serfdom, *e.g.*, in U. P. the creation of *talukdars* in Avadh after the Mutiny was dictated by the political necessity irrespective of the rights of the mass of peasantry. Dr. B. R. Misra has so pathetically remarked that "Government, entirely for political considerations, subordinated and sacrificed the interests of the millions to the interests of the few."³ This resulted in the creation of landlordism, the conversion of occupants into full-proprietors and under-proprietors, and the emphasis on the distinction between the superior proprietors and under-proprietors, which have been responsible

1 R. Temple, *Men and Events of My Time in India*, p. 30.

2 Quoted by A. Haque in *Man Behind the Plough*, p. 255.

3 B. R. Misra, *Land Revenue Policy in U. P.*, pp. 196-197.

for the deterioration of the economic position of the *ryots* and for the growth of a class of capitalistic rent-receiving intermediaries.

Landlord tenures though found in almost all the States of India are not equally important in all of them. Zamindari system prevails in Bengal, Bihar, Orissa and in Northern Circars and Southern districts of the Madras and Avadh. Landlord estates also occur in parts of Agra, Ajmer, M. P., Bombay and Assam.

All these landlord estates fall into two broad classes, *viz.*, those permanently settled and those temporarily settled.

(i) Permanent Settlement

The Permanent Settlement was introduced in Bengal by Lord Cornwallis in 1793. The system was later extended to other parts of the country as the Directors of the E. I. Co., were favourably impressed by the Permanent Settlement. The system was, therefore, applied to Banaras, to North Madras, to U. P. and parts of South Madras. The question of extending Permanent Settlement came up for discussion even after the abolition of the Company's rule but Government had learnt by experience and turned down firmly all proposals for a further extension of the system.

The Permanent Settlement had three main features : *Firstly*, it gave the zamindar proprietary rights in the soil, subject to his paying regularly the land revenue due from the estate. *Secondly*, in order to encourage the landlords to invest money in the improvement of their estates it fixed the State demand in perpetuity. *Thirdly*, that if the land revenue due from the zamindar was fixed at a lump sum (10/11ths) this assessment was declared fixed and unalterable. The State sacrificed its right to enhance the land revenue due from the estates under the zamindars in order to induce them to spend capital on the development of their estates and to encourage the expansion of cultivation.

Results of Permanent Revenue Settlement

The Permanent Settlement had disastrous results for the cultivating *ryots*. At the time of the Permanent Settlement the *Khudkasht* *ryot* had real proprietary rights in the soil ; the land revenue which they paid to the zamindars was regulated by customary rates (known as *pargana* rates) and they could not be ejected so long as they paid those customary rates. They had also "a number of communal privileges in regard to homestead plots and to the pasture and forest lands, bundhs, tanks, irrigation channels and fisheries to the services of the village servants or officials, and

to the pick of fields left unoccupied."¹ The Permanent Settlement while it gave the zamindars the proprietary rights in the soil, left undefined the customary rights of the ryots. The result was to place the ryots entirely at the mercy of the zamindars, who gradually secured the right to enhance the amounts due as land revenue from the ryots and to evict ryots. Further no attention was paid to the rights of the heritability and transferability of the holdings enjoyed by the ryots. In the year that followed the Permanent Settlement when there was plenty of wasteland to be reclaimed, the competition was not for land among the ryots, but for ryots among the zamindars who wanted to bring the wasteland under cultivation and naturally no one thought that it would make the zamindar to evict a ryot. Hence, no adequate provision was embodied in the Permanent Settlement to protect ryots from enhancement of rents and arbitrary evictions.

Thus in the period between 1793 and 1859, the ryots were left to the mercy of the zamindars and their rights were completely effaced. "Within a few decades not merely were the customary rates all broken up, district by district, but the rights of the ryots were so completely obliterated thatit was difficult to find a single vestige or ascertain what they were when the first tenancy legislation was being considered."² In fact, in the interval of 66 years (*i.e.*, between 1793 and 1859) while the proprietary body grew in strength and prospered in wealth, village communities perished, the pargana rates disappeared, and almost vestige of the constitutional claims of the peasantry was lost in the usurpations and encroachments of the landlords.³ So says Dr. R. K. Mukerjee that the landlords have encroached upon and restricted rights in the village commons, and displayed little practical interest in the improvement of the conditions of the tenants as they are merely concerned with exacting as much revenue as possible from the ryots.

Further, the landlord magnates whether the zamindars of the Bengal or the talukdars of Avadh or the large landowners of the Canal Colonies in the Punjab, had neglected their duties towards the ryots, done very little towards the improvement of the land and contributed by their indifference and neglect to the growing impoverishment of the agricultural classes.

Another noteworthy consequence of the Permanent Settlement in Bengal has been the subdivision of rights in land. The zamindars leased out their interests, and the middlemen leased out in turn, creating a long chain of rent receivers and rent payers

1 R. K. Mukerjee, *Economic Problems of Modern India*, Vol. I, p. 220

2 *Ibid.*, p. 220.

3 *Ibid.*, p. 220; and H. D. Malviya, *Land Reforms in India*, 1954, p. 123.

who intervene between the state and the actual cultivators. This feudalism on the one hand, serfdom on the other, were and are the principal characteristics of the land system of Bengal. With the increasing sub-infeudation, relations between the zamindar and the cultivator have become more strained, a greater gulf had been created between the two.

What is more significant is the social change brought about by the Permanent Settlement. "By vesting the zamindar with all residuary rights of property, the Government exalted their status and ensured a continuous improvement in their condition. On the other hand, the rights of the ryots were exposed to damage. The practical security given by custom was shattered; in its place were substituted the shadowy protection of the courts; and a vague promise of succour in future. By this undermining the protection of the ryots and giving a new bias to the interests of the zamindars, the Permanent Settlement altered the balance of rural society in Bengal."¹

It has also increased rack-renting. The peasantry today is caught within the pincers of rack-renting. It has been estimated that almost 50 to 60 per cent of the gross produce on an average is handed over by the cultivator to the landlords towards the payment of rent. A survey of 27 farms under tenancy in the Punjab indicated that "of the net income of cultivation, less than 18% is enjoyed by the worker and the rest goes to the non-working owner of the land. Rack-renting has reached to a great extent in the areas where the system of crop-sharing prevails. According to Dr. Gyan Chand in Bengal nearly 1/5 of the total sown area of the province are cultivated under this system. These crop-sharers are generally landless labourers, expropriated proprietors or occupant-tenants with unduly small holdings. The proportion of the landlord's share in the crop varies, but one-half is the rule. The landlord thus saves the cost of cultivation, avoids all risks in the enterprise and is yet assured of some return from his lands. In addition to his share, he makes the tenant pay premium and render other services for being permitted to cultivate land. The reduction of half share of crop paid by the tenants-at-will to one-third, as suggested by the Bengal Land Revenue Commission, would mean $5\frac{1}{2}$ times as much as is payable by the ryot, and $2\frac{1}{2}$ times that payable by the under-ryots."² In Madras 14% of the agricultural population are lendless tenants cultivating lands of others, and the total number of sub-tenants is estimated at 1.5 million. In Bombay, though under the Ryotwari system the land is supposed to belong to the peasant proprietor, there are "18,56,000 cultivators owning 1,86,56,000 acres; 522,600 non-agriculturists own

1 S. Gopal, *The Permanent Settlement in Bengal and its Results*, 1949, p. 25.

2 *Congress Agrarian Reforms Committee Report*, p. 37.

82,94,000 acres. In other words, the per capital land owned by the cultivating class is 10 acres, the land owned by the non-cultivating class is 15.9 acres."¹ Owing to the practice of sub-letting, 30 per cent of the lands in Bombay and Madras are not cultivated by the tenants themselves. The Simon Commission reports about Bengal, "In some districts the sub-infeudation has grown to astonishing proportions, as many as 50 or more intermediary interest having been created between the zamindars at the top and the actual cultivators at the bottom."² In Bihar, landlord's share except where it is a fixed quantity of grain per bigha is nine-twentieths but this has led the landlord to call upon the tenant to render services, make presents or pay dues on tolls. In U. P. nearly one-fourth of the sown area may be said to be under this system. According to the Congress Agrarian Committee Report the total number of sub-tenants is 27 lakhs, and it is 32 lakhs according to Dr. Mukerjee. The share croppers have to pay half the gross produce and in most cases many perquisite levies. In the Punjab, about 50% of the sown area is cultivated by tenants-at-will who are all share-croppers. The proportion of the landlords' share in this province varies from 1/4 to 1/2, but the latter is generally the rule.

In this connection it is interest to note what Prof. Marshall says, "When the cultivator has to give his landlord half of the return to each dose of capital and labour that he applies to the land, it will not be in his interest to apply any dose the total return from which is less than twice enough to reward him."

To sum up we may say that far from being leaders, landlords became absentee parasites. The zamindari tenure has proved harmful to cultivators and has stood in the way of agricultural progress. The cultivators have suffered from rack-renting and insecure tenure. Frequent enhancement of rent and constant fear of ejectment have discouraged all enterprise on their part. Cultivation under zamindari tenure is much less efficient than cultivation by peasant proprietors. "Give a man the secure possession of a bleak-rock and he will turn it into a garden ; give him a nine years' lease of a garden and he converts it into a desert." H. Calvert has so beautifully pointed out this situation thus : "They generally take less care in preparing the crops, plough land less often, manure it less and use fewer implements upon it than owners. They grow less valuable crops, especially avoiding those requiring the sinking of capital in the land ; they make little or no effort at improving their fields ; they often keep a lower type of cattle ; they avoid perennials and bestow on no care on trees."³ Besides, there is an increase of non-cultivating land-owners every-

¹ *Ibid*, p. 40.

² *Simon Commission Report*, Vol. I, p. 340.

³ H. Calvert, *Wealth and Welfare of the Punjab*, 198.

where, even in the strongholds of cultivating proprietorship. This encroachment of landlordism has brought in its wake all the evils of spendthrift and inequitable land management.¹

(ii) Temporary Settlement

The tenure system based on the permanent settlement has led to a number of evils such as absentee-landlordism, rack-renting, economic serfdom of the tenants. All these results soon brought the fact to the light that the main advantages claimed for a Permanent Settlement, *viz.*, that it gives the landlord an incentive to extend the area and improve the standard of cultivation, could be secured equally well by a temporary settlement for a fairly long period, the State reserving the rights to enhance the land revenue assessment at the end of every such period. The British Government, therefore, continued the policy of recognising one person with landlord rights and making him responsible for land revenue, but it fixed the land revenue due from these estates on a temporary basis. This led to the origin of the Temporary Settlement, which differs from the Permanent Settlement in two aspects, *viz.*, the land revenue assessed on the estate is fixed only for a specified period and *secondly*, greater care has been taken to protect the rights of the parties below the persons recognised as landlords by Government.

Under the Temporary Settlement may be included the (a) Taluqdars of Avadh; (b) The Landlords in Agra and (c) the Malguzars of the M. P.

(a) The Taluqdars of Avadh

They were also originally the revenue farmers. The rulers of Avadh has been in the habit of entrusting the collection of land revenue to the descendants of the dispossessed Rajahs, to bankers and capitalists and to military officials and by the time of the advent of the British these had consolidated their position and claimed landlord rights. Under the Avadh settlement the taluqdars were recognised and settled with as zamindars but the land revenue assessed on their estate was made liable to periodical revision. The *Taluqdar* estates were increased by (i) the taluqdar's forcible encroachment on the means, land of his weak neighbour, (ii) the adoption of fraudulent means (iii) sale deeds obtained by force, (iv) forced sales by auction for arrears of revenues, and (v) bona fide sales by the holders in order to raise the revenue demanded by revenue-farmers of *chakladars*.

(b) Landlords in Agra

In some parts of Agra the British came across territorial magnates who had risen to the landlord status by the exercise of

6. R. K. Mukerjee, *Op. Cit.*, p. 148.

the revenue-farming rights under the Avadh kingdom. These were given only a limited overlord rights over the estates of which they claimed to be owners. The village communities under them were directly settled with as the actual proprietors; but the land revenue assessed on them was raised just so much as to allow for the payment of a taluqdari allowance of 10% of the land revenue to the overlord, direct from the Government treasury.

(c) The Malguzars of the M. P.

They owe their present landlord status to a land revenue settlement with the British. The Maratha rulers had employed individuals known *Malguzar* and *Patels* to collect land revenue from the various villages, and these had in course of time strengthened their position and claimed landlords' rights. When the territory came under the Britishers, the British Government, settled with the *malguzars* on whom they conferred proprietary rights. The land revenue due from the *malguzar* was liable to periodical revision and the rights of the ryot below the *malguzar* were more carefully projected.

Permanent Settlement and the Land Revenue Commission of Bengal

The following arguments have been advanced in favour of the Permanent Settlement in Bengal :—

(i) *Financially* it has ensured to the State a fixed stable revenue without necessity of incurring heavy expenses in connection with periodical reassessment and collection.

(ii) *Politically* it has secured the loyalty of the zamindars in the task of consolidation of British rule in India.

(iii) *Socially* it has enabled the zamindars to act as the natural leaders of the ryots and to show their public spirit in a practical manner by helping the spread of education and sound ideas on sanitation, etc. By increasing the zamindar's profits it encouraged sub-infeudation and brought into existence a body of tenure-holders vastly outnumbering the original zamindars. It thus promoted the prosperity of, if it did not create, that class in Bengal which has had leisure for culture and politics, has provided educated men for the professions and the government services and is responsible for all political progress.

(iv) *Economically* it has secured agricultural enterprise and prosperity and a resourceful peasantry which has shown a remarkable power of resistance in times of scarcity.

(v) *Lastly*, it has avoided the evils associated with the temporary settlements, such as the harassment of the cultivator

at the time of revision, the expensive machinery required for resettlement.

But all these advantages have been bought at a heavy price. The Bengal Land Revenue Commission which was appointed under the chairmanship of Sir Francis Floud to examine the existing land revenue system of Bengal with special reference to the Permanent Settlement and to appraise the advantages and disadvantages of the existing system, is of the opinion that zamindari system has developed so many defects that it has ceased to serve any national interests. According to them the defects are :—

(1) It has stereotyped the land revenue at a figure which is far below the fair share which the Government ought to receive from the produce of the land. In a word it has been at the same figure for the past 150 years and rendered the revenue of the Provincial Government extremely inelastic. The benefits of the introduction of more valuable crops and higher prices, the unearned increment due to the growth of towns and the development of trade industry, the extra income created by the discovery and exploitation of the mineral resources of the province have all gone into the hands of the landlords. The Commission estimates the annual loss in this generation at anything between 2 crores and 8 crores.

(2) The community has been deprived of its legitimate right to share in the increasing prosperity of the zamindars, which is due not so much to the direct efforts of the landlords themselves as to social factors beyond their control such as growth of population, improved communication and rise in prices.

(3) It has involved Government in the loss of revenue from minerals and from fisheries as these natural resources were not taken into account at the time of Permanent Settlement, and in consequence they have been exploited for private gains without any co-ordinate plan.

(4) It has deprived Government of intimate knowledge of rural conditions such as Ryotwari system affords ; as there was no direct contact with the cultivators. It has been one of the greatest administrative defects that, throughout the last century, the administration has had to carry on without any village maps, any record of rights, and without the wide knowledge of local conditions and customs which has followed temporary settlement operations. Consequently the Government has had little incentive to spend public money on agricultural development when the benefit of such improvement goes only into private hands.

(5) The zamindars have not only failed to act as leaders of the rural community but they have actually oppressed the tenants

by all sorts of legal exactions and have become parasitic on the land. To be more definite, the evils of absenteeism, the management of the estates by unsympathetic agents, or unhappy relations between the landlord and the tenant, and of the multiplication of the tenure-holders are at least as marked and as much on the increase there elsewhere.

(6) It has encouraged an excessive amount of sub-infeudation, creating a number of intermediaries between the zamindar and the actual cultivator, which in some districts has reached fantastic proportions owing to the margin between the fixed land revenue and the economic rent of land. The land is nobody's concern The responsibility for agricultural welfare cannot be fixed at any particular link in the chain between the zamindar and the cultivator.

(7) The system has led to an immense volume of litigation due to uncertainty regarding the respective rights and obligations of the parties interested in land, the unsatisfactory record of rights, the fraudulent manipulation of the records in the zamindar's office.

(8) So long as the Zamindari and Permanent Settlement is allowed to continue, it will be impossible to give the cultivators (in zamindari areas) remissions of rent in times of natural calamities such as floods and droughts.

(9) The rents paid by the tenants in the zamindari areas have not been fixed on any scientific principle and have no recognised relation to the quality of the land or the value of the produce. The occupancy tenants are themselves degenerating into a class of rent receivers, and a large and increasing proportion of the actual cultivators have no part of the elements of ownership, no protection against excessive rents and no security of tenure.

In brief, the Land Revenue Commission says, "He has become an incubus on the working agricultural population, which finds no justification in the performance of any material service, so far as agricultural improvements are concerned, and fails to provide for any effective means for the development of the resources of the land."¹ The Commission further strongly emphasized that the "present system ought not to remain unaltered . . . for whatever may have been the justification for the Permanent Settlement in 1793, it is no longer suited to the conditions of the present time." In their replies to questionnaire issued by the Bengal Famine Enquiry Commission, the then Provincial Governments condemned the zamindari system. The Orissa Government wrote, "The

1 *Bengal Land Revenue Commission Report*, p. 37.

zamindars in general, whether of permanently settled estate, or temporarily settled estates, not only do not introduce any improvement to get better yield or to protect the land from floods or drought but exploit every opportunity of realization of enhanced rent or other dues from the tenants." The Bihar Government observed, "The landlord has no incentive to provide any facilities to the tenant and merely collects his rent." The Assam Government replied, "While ryotwari tenure induces increased production, the opposite is the case in zamindari areas. Under the zamindari system there is a general feeling of insecurity and shoit of abolishing this outmoded system, no other change will give full results." According to Director of Agriculture, Madras, if this system is to be replaced by the ryotwari system, "There is no doubt that there will be an improvement in irrigation facilities, the maintenance of records of rights, the establishment of co-operative societies and extension of the activities of the Agriculture Department". The Punjab Government also condemned the absentee landlord. "The landlord has not taken to mechanical farming and still looks to the Government for the lead."¹

As the Land Revenue Commission have emphasized, "The disease is far advanced and no half-measures will satisfactorily remedy its defect *ie.*, give the actual cultivator a safe tenure, a fair rent and a guarantee that he would be left free to enjoy in full the fruits of his toil. Provided that a practicable scheme can be devised to acquire the interests of all classes of rent receivers on reasonable terms, the policy should be to aim at bringing the actual cultivators into the position of tenants holding directly under Government."²

The Commission recommended the following measures :—

(a) The abolition of the zamindari system and the acquisition by the Government of the interests of all the rent receivers above the actual cultivators.

(b) The payment of compensation at a flat rate for all interests, the rate of compensation being 10 or 12 or 15 times the net profit secured by the zamindar or the tenure-holder. Payment should be made preferably in cash. The process of acquisition should be gradual, 50% of all arrear rents payable from cultivators should be added to the amount of compensation while the amount of arrear rents would be payable to the Government.

(c) Fishery and mineral rights should also be included in the scheme of State acquisition.

(d) The imposition of an agricultural income tax as a tradi-

1 *Bengal Famine Commission Final Report*, pp. 449-56.

2 *Report*, p. 42.

tional measure until the scheme of state acquisition is effected, the proceeds of tax being ear-marked for agricultural improvement.

The acquisition of all interests of the rent receivers by the Government, will lead to a direct relation between the ryot and the Government resulting in the resettlement of the rents on an equitable and uniform basis having regard of the yield of land and the cost of the living of the farmer. Government will also be able to initiate schemes for consolidation of holdings, the restoration of economic holdings and the provision of grazing lands and the prevention of transfers of land to non-agriculturists; and that it may return to the cultivators a part of the land revenue received from them in the shape of improved social services. But it will all involve a heavy initial expense for the Government, as the parties will have to be paid a reasonable compensation and hence the Government will have to carry out the scheme of acquisition only gradually over 9 years.

NEED FOR TENANCY LEGISLATION

We have seen how the land system led to serious defects besides giving rise to a number of intermediary interests between the zamindari at the top and the actual cultivators at the bottom and the creation of a class of absentee landlordism who cared more for their exactions than for the improvement of land. Consequently the ryots were always living in constant dread of enhancement of rent or eviction of his land. This created great agrarian discontent. Hence, Government had to come forward to intervene in the affairs to protect the tenants.

Tenancy Legislation in Bombay

Government intervention began with the passage of Bengal Rent Act of 1859. This Act divided the settled cultivators of Bengal into three classes : (i) For those who held the lands at the same rents, since 1793 it was enacted that the rental should remain unaltered for all the time to come ; (ii) For those who held land at the same rent for 20 years, it was to be presumed that they had paid the same rents since 1793 until the contrary was proved ; (iii) Those cultivators who had lands for 12 years, were granted occupancy rights, their rents not to be raised thereafter except on specific and reasonable grounds provided in the law. But this legislation proved ineffective. Because the zamindars did their best to prevent a cultivator from becoming entitled to the occupancy tenancy through 12 years' of interrupted cultivation. They used various devices for enhancement of rents and ejection of the old tenants and harassments. This created an acute agrarian discontent and even riots. This situation led to the passage of another Act in 1885 known as Bengal Tenancy Act of 1885, the main objects of which were to extend the ryots of occupancy to settled cultivators, and to extend adequate protec-

tion to non-occupancy cultivators.¹ But even in spite of all this the rents went on increasing on the doctrine of average rate on the grounds of higher prices. The landlords succeeded in getting a price for recognition of all transfers which had been freely done hitherto.² The law again intervened in 1928 and made occupancy holdings transferable subject to certain conditions. It also provided that the landlord had the right of pre-emption to purchase the holding within two months of the sale at 10% over the sale price. The pre-emptive right was again vested in the landlord. In a word, the old policy of allowing "every point about which there could be any doubt . . . to settle itself in favour of the landlord and against the public" continued to the last.³

In *Bengal*, the Bengal Tenancy Amendment Act was passed in 1938. (1) It permitted the occupancy ryot to sell his land to any person without the payment to the landlord of any transfer fee; (2) declared illegal the *salami* and other cesses imposed by the zamindars; (3) suspended all provisions relating to the enhancement of rent for a period of 10 years; (4) took away from the landlord the right of pre-emption (which he had till then enjoyed conferring it on the co-sharer tenants); (5) reduce the rate or interest payable on arrears of rent to 6½%; (6) declared that all usufructuary mortgages on occupancy holdings (entered into before the Amending Act of 1938) would expire at the end of 15 years, when the holdings would thus revert to the ryot. This provision naturally aroused violent controversy. The landlords opposed the Act as verging on expropriation, while the spokesmen of the cultivating classes denounced it as too moderate and demanded the abolition of the zamindari system. This led to the appointment of the Bengal Land Revenue Commission, whose recommendations have already been noted in the previous section. The Bengal State Acquisition and Tenancy Bill, 1947, was prepared before the partition of Bengal, according to which (1) on the acquisition of his interest the rent-receiver will be allowed to retain lands, *viz.*, homesteads, land used for agricultural or horticultural purposes, and waste-lands capable of cultivation and all land other than this will be acquired by the State. (2) No one whether a ryot or a rent-receiver will be allowed to retain cultivated land or cultivable land exceeding a maximum of 100 standard bighas. (3) Rent payable shall be presumed to be fair and equitable and it will also be fixed in holdings held rent free in consideration of service. (4) No compensation will be paid to ryots or under-ryots for land left in their possession.

1 R. C. Dutt, *Economic History of India in the Victorian Age*, p. 146.

2 A. Haque, *Op. Cit.*, p. 270.

3 Quoted by A. Haque p. 270.

(5) Compensation will be paid by capitalisation of net income. A rent receiver with temporary interest or mortgagee with possession shall receive a part of the compensation paid to the superior landlord or the mortgagor. (6) Arrears of revenue and cesses due from the rent-receiver shall be deducted from the compensation, the amount of which if less than 1000 shall be paid in cash otherwise either in cash or in bonds of guaranteed value at maturity carrying an interest of not less than 3%. (7) Except for non-agricultural tenancy in homesteads held by proprietors and tenure-holders, there shall be only one class of tenants on the land, namely, ryots, who will have the right to use land for agriculture, horticulture and pasture and a right to make necessary improvements. (8) The ryot shall be liable to ejectment in case of improper using of land so as to materially impair its value. (9) He will not be allowed to sub-let it but should himself cultivate it. (10) He shall have the right to transfer his land. (11) He shall pay or tender each instalment of rent before sunset on the day on which it falls due.

Tenancy Legislation in Madras

In Madras, the rights of tenants in the landlord estates were for the first time given statutory recognition and protection by the Madras Estates of Land Act of 1909. By this Act occupancy right was accorded to every zamindari ryot subject to payment of lawful rent and provision was made for enhancement of money rents on application to Revenue Courts on specific grounds such as increase in value of the crops, etc.

In Madras, the Madras Estates Land Act of 1909 governed the relations between the landlords and the ryots and was the only measure for the protection of ryots against rack-renting and illegal dues and improper enhancement of rent till 1937 with the coming in of power of the Congress Ministry. It appointed a Madras Estates Land Act Committee (better known as Prakasham Committee) to enquire into and report on the conditions prevailing in zamindari areas and suggest the legislative measures. Accordingly, the Committee submitted its report in November 1938 and made the following recommendations :—

(1) The present state of affairs (which has been brought about by the errors of administration) should be radically altered and the position which the framers of the Permanent Settlement intended for the ryots should be restored to them. For that purpose all rents in zamindari should be fixed at the figures in force in the year preceding the Permanent Settlement, *i.e.*, 1801.

(2) Where the rent of 1801 was in kind, it should be commuted at the grain prices prevailing in that year.

(3) Rent on lands which were waste in 1801 should be fixed.

at the rates applicable to adjacent lands of similar quality which had been occupied in 1801.

(4) All occupation of land which had at any time been communal land should be made illegal.

(5) All forests should be declared the property of the village community.

(6) All rights to the control of irrigation in estates should be appropriated by the Government.

(7) Every ryot should be given the right to work the mineral in his land and to enjoy all the natural facilities including grazing of cattle, collection of green manure or wood for agricultural purposes.

(8) Recovery of arrears of zamindari rents should be effected by Government under the Revenue Recovery Act and a fixed percentage charged for such recovery.

But unfortunately it gave no opinion at all on the question of rights of the sub-tenants and this major omission meant that the cultivator as such was left out of the picture.

In January 1939, the State legislature passed resolutions urging the Government to bring in legislation to implement the recommendations of the Committee. A draft Bill called the Madras Estate Land Revenue Bill, 1939, was accordingly prepared. But soon after the Congress Ministry resigned from the office. The Advisory regime, which succeeded the Ministry, considered the recommendations of the Estate Land Act Committee to be unfair and impracticable, as turning the clock back and decided to put it in cold storage and took to devising other means of solving the zamindari problem.

The Popular Ministry which was formed in 1946 again took up the question of legislation in regard to the zamindari estate and in November 1946 decided :

(1) That the general principle of the abolition of the zamindari system should be adopted, and

(2) That a cabinet sub-committee should examine the Madras Estates Land Revenue Bill, 1939, and make recommendations thereto.

In pursuance of this decision of the Government passed an Act for the Prevention of Eviction of Tenants in 1946 and the Reduction of Rents on Estates Act was passed in 1947.

At the same time a draft scheme for the acquisition of the estates and their conversion into ryotwari was worked out in the Revenue Department in consultation with the Board of Revenue and other Departments concerned. After further discussions the legislation emerged as the Madras Estates Repeal of the Permanent Settlement and conversion into Ryotwari Bill, 1947. The Bill provides that after its enactment the ryot in respect of his holding and the landholder in respect of his private land will have the right of a holder under the ryotwari settlement and that all communal lands, forests, mines and minerals shall thus stand transferred to the State. In other words, the intention is to replace the Permanent Settlement by the Ryotwari System.

Tenancy Legislation in M. P.

In *M. P.* the Tenancy Act of 1920 was amended in 1938. It prohibited, on the point of fine, the employment by any landlord of his tenant or a member of tenant's family without proper payment, thus penalising *begar*. The Act was further amended in 1939. The main provision of the Act, were : (1) absolute occupancy tenants were given the right to transfer any right in their holdings without reference to the landlord by simple mortgage, to sublet for a period not exceeding 5 years and to bequeath the holdings. In the case of transfer by sale, notice must be given to the landlord who had the right of pre-emption ; (2) occupancy tenants, as distinguished from absolute occupancy tenants, were also given similar right of transfer, subject to the right of pre-emption of the landlord ; (3) all tenants, other than sub-tenants, were given the right in all trees in their holdings and also the right to take timber from the holdings ; (4) a sub-tenant may be declared an occupancy tenant if a land if habitually sub-let.

The Government accepted the suggestion of the Commissioner and Director of Land Records of raising land revenue and two Acts (i) the *M. P. Revenue of Mahals Act, 1947* and (ii) the *M. P. Revenue of Land Revenue of Estates Act, 1947* have been passed. As a result of these Acts has been (i) the land revenue payable by malguzars for their *mahals* will now be assessed at 75% of the assets of their *mahals* as against about 50% before, and (ii) the quit-revenue or 'Takoli' of estates held by zamindars will be raised by a graded scale to come to about 50 to 60% of the net assets of the *mahals* comprising their estates.

Tenancy Legislation in Bombay

In *Bombay*, the Bombay Tenancy Act of 1939 has, with suitable modification, been extended with effect from 11th April 1941, to the whole of the State. The object of this act is to confer fixity of tenure and to afford protection against rack-renting to the tenant and thus give him incentive to improve the land

and obtain better crops from it. Under this Act tenants have been divided into two classes, *viz.*

(i) Protected tenants and (ii) tenants. The protected is one who has land continuously for a period of six years immediately preceding 1st January 1938 or the first day of January 1942, and has cultivated it personally. The protected tenant has a permanent and heritable right in land but may be ejected on the following grounds :—

- (1) For the non-payment of rent,
- (2) If he does any act which is destructive or permanently injurious to the land,
- (3) If he sub-lets land or fails to cultivate it personally,
- (4) If he uses land for a purpose other than agriculture,
- (5) If he subdivides the land held by him.

The protected tenant can be evicted by the landlord on one year's notice if the landlord wishes to cultivate the land personally or use it for a non-agricultural purpose. If the landlord fails to put it to the purpose for which the tenant was ejected, the protected tenant is entitled to obtain its possession.

The protected tenant has a right to first refusal in case of any new land intended to be leased out by the landlord. He is also entitled to get compensation for improvement made by him before he is evicted from land.

(ii) Tenants who are not protected tenants have a right of occupation for at least 10 years. They may be evicted during this period on the same grounds as those given above for protected tenants. Both the protected tenants and other tenants pay to the landlord nothing more than : (1) the rent agreed upon ; or (2) the rent payable according to the usage of the locality ; or (3) a reasonable rent determined by a revenue officer.

These provisions protect the tenant from rack-renting by landlords. According to the recent legislation, a tenant cannot be ejected by a landlord who has in his cultivating possession 50 acres or more. He has also a right to purchase the land he is cultivating, if less than 50 acres, at a price determined by a Tribunal.

Tenancy Legislation in Bihar

In Bihar, the economic depression after 1929 increased the clamour for tenancy reform, and the result was the passing of the Bihar Tenancy Amendment Act of 1937 and 1938. These Acts greatly strengthened the position of the tenants. (i) These Acts cancelled all enhancements of rents between 1911 and 1936 and reduced all rents commuted between these years in proportion

to fall in prices; (ii) they limited the rate of interest chargeable on arrears of rent to $6\frac{1}{2}\%$; (iii) they granted the right to transfer to occupancy tenants with the right to dig wells, construct houses (iv) conferred occupancy rights on under-ryots who had held the same land for 12 years; (v) abolished; the *salami* payable to the landlord.

The Bihar Restoration of Bakasht Lands and Reduction of Arrears Rent Act, 1938 provided for restoration to the ryot of the lands sold during the depression in execution of a decree for arrears of rent and for reduction of the arrears of rent in view of the circumstances of the ryot affected by fall in prices.

The Chhota Nagpur Tenancy Amendment Act of 1934 removed and relaxed the restrictions on transfer of occupancy holdings in Chhota Nagpur and their division by partition and distribution rent, laid down conditions under which a reduction of rent on occupancy holdings could be demanded and provisions for governing the realisation of arrears of rent.

The other Acts are Champaran Agrarian Amendment Act of 1938, the Bihar Tenancy Amendment Act of 1940, etc.

The Bihar Government, like Bengal, did not appoint a committee to enquire into the problems connected with the abolition of zamindari. It took decisions on the basis of office memoranda. In pursuance of its policy it passed an Act known as the Bihar State Acquisition of Zamindari Bill, 1947.

Tenancy Legislation in U. P.

In Agra the Rent Act was supplemented by further Tenancy Acts in 1921 and 1926. This Act conferred on the non-occupancy ryots the rights to hold their land for life, and the heirs of these statutory tenants were to be allowed to stay on in their lands for another 5 years. The landlords could enhance the rent due from statutory tenant only at intervals of 20 years. This Act gave certain measure of protection to all the tenants except those working on the landlord's private lands. Under this Act a statutory life tenure with a right to the heir to remain on the holding for another 5 years was conferred on a large number of tenants. The right of the landlord to enhance the rent of the statutory tenant was restricted and the rent could be so enhanced only once in every ten years.

In U P the United Provinces Tenancy Act was passed in 1939. This Act consolidated and amended all tenancy laws of Agra and Oudh in the light of the findings of a Committee. The main provisions of the Act are : (1) it reduced drastically the amount of 'Sir' land which the landlord could retain, the maximum area being 50 acres; (2) certain classes of 'Sir' lands ceased to be such,

and the tenants became hereditary tenants ; (3) within 5 years, the rents would be brought down to the level of those prevailing between 1895 and 1905 ; (4) thereafter, no revision could be allowed for 20 years except under exceptional circumstances ; (5) the rate of interest on arrears was reduced to 6½% ; (6) the rule regarding ejectment and distraint have been tightened ; (7) several other benefits were conferred on the tenants such as the right to plant trees, to make improvements and building and dwelling-house on the holding.

The Tenancy Act was amended in 1947 to restrict the landlords' power of acquiring land and to allow the tenant payment either direct to the landlord or by money order or by depositing it in a Court of law.

While in M. P., the Tenancy Act of 1920 was enacted to define the relations between the *malguzar* and tenants below him. Though the details differ from province to province, yet the net result of these enactments has been to create a privileged class of tenants known as 'Occupancy Tenants', who enjoy protection from arbitrary enhancements of rent, fixity of tenure and in some provinces the right freely to transfer their holdings. The results were everywhere the same and the law too tender to the landlord to uproot the evils of tenure from the land system. As Floud Commission so ably summed up the situation in these words, "It is true that the successive provisions of the Tenancy Acts have endowed the ryots with the practical ownership of the land. But a large and increasing proportion of the actual cultivators have no part of the elements of ownership, no protection against excessive rents and no security of tenure."¹

The tenancy legislation in India, as will be clear from the above study, reveals that the main objects of the tenancy legislation have been :—

- (1) To put a limit on the enhancement of rents ;
- (2) To prevent arbitrary ejectments ;
- (3) To confer occupancy rights on tenants so as to make land heritable and also alienable ;
- (4) To restrict the right of distraint for arrears of rent, exempt attachment for tools, cattle and seed.
- (5) To provide for reduction or suspension of rent where there is a reduction or suspension of land revenue ;
- (6) To provide for compensation to the tenant for any improvements he makes on the land ;
- (7) To protect the tenants from exactions like *salami*, *abwabs* and *veth* etc.

1 *Op. Cit.*, p. 39.

LAND REVENUE POLICY

Since time immemorial it became a recognised attribute of the ruling power that as a matter of custom it had the right to the share of produce. During the Hindu period, the king had no property right in land, except the right to a share of the produce. His customary share was $\frac{1}{8}$ th of the produce and was known as customary *Pargana Rate*. The Mughals also had no property right in land. They in their heydays introduced regular records and revenue accounts and took $\frac{1}{3}$ of the produce. The Marhattas accepted these rates as the basis of this system, raising them to what they called *Kamal*, i.e., maximum on perfect rates payable by the best lands. With the appearance of the revenue farming system, the revenue farmer paid the Government nine-tenths of the whole collection and kept the rest as his remuneration. But later on, the right of collecting land revenue for a Pargana was sold by auction to the highest bidders. With the introduction of the British rule in the country, the State was regarded as the supreme landlord and the assessment was made individually.

The land revenue systems prevailing in India, now, may be classified from two angles :—

(i) Whether the land revenue is fixed once for all, or whether it is revised periodically. The former is known as the 'Permanent Settlement,' and the latter the 'Temporary Settlement.'

(ii) The second basis of classification is the responsibility of paying the land revenue. On this basis we have three land revenue systems :—

(a) The Zamindari system under which the responsibility for the payment of land revenue rests on the zamindar or the owner of land who realizes the amount from actual cultivators. This system is now on the wane.

(b) The Ryotwari system under which every land-holder is individually responsible for the payment of land revenue, as in Madras and Bombay.

(c) The Mahalwari system under which the members of the village communities of co-sharing bodies are jointly and severally responsible for the payment of land revenue as in the Punjab and parts of U. P.

Land Revenue Administration

The general features of the land revenue administration, whether Zamindari or Ryotwari, may be indicated under three heads :—

- (i) The preparation of the Cadastral records,
- (ii) The assessment of the revenue, and
- (iii) The collection of revenue so assessed.

1. Preparation of Cadastral Records

The land records include the village map, the revenue record and the record of rights. These records are prepared by means of a detailed field-to-field investigation and by inquiries from the villagers, the facts required for preparing the register of cultivating rights (or *Khatauni*), agricultural statistics, and the changes in the field boundaries, so as to secure an exact amount of the cultivable land, the extent of each kind of soil requiring its own rate of assessment. From this survey a map is prepared for each village showing the separate holdings and the area and nature of the cultivable and wasteland. To correspond with the village map, a field book (or *Khasra*) is usually prepared, and from these two (the village map and *Khasra*) the revenue record, showing a correct list of revenue payers with the amount shown against their names, is prepared. There are supplemented by statistical tables and returns illustrating the past history and the present condition of the village. A record of rights in the land such as the rights of landlords, co-sharers, sub-proprietors, occupancy tenants, as well as the rights created by mortgage sale, lease and so on is maintained. All these records are kept up to date by a system of public entry and registration of all changes. Thus the land records contain information about proprietary and tenancy rights in land, the revenue payable by each cultivator, the rent of each tenant, the area cultivated, the kind of crops grown, the nature and extent of irrigation,¹ the customary rights of the village, the amount of rent and other dues actually paid to the proprietor and other details about the land in the village.

1 The Patwari prepares each year five statistical statements, viz:—(i) *Kharif* crop statement, (ii) *Rabi* crop statement, (iii) *Zaid* crop statement, (iv) area statement, and (v) statement of holdings and rentals. The first four are prepared from the *Khasra* and the fifth from the *Khatauni*.

(i) In the Crop Statement, the Patwari enters all the crops sown during each season. These crops are divided under the broad heads: (1) Food crops such as Jwar, bajra, maize, rice in the *Kharif* season and wheat, barley, gram, peas with their mixtures in the *Rabi* season and (ii) non-food crops such as fodder crops cotton, indigo, sugarcane, tobacco, opium, oilseeds, condiments, drugs, etc. The area in which crop failed is also shown in these statements.

(iv) The Area Statement gives the area of each class of land arranged under the following heads:—

(1) Barren Land:—

- (i) Caused by water
- (ii) Sites, roads, buildings, etc.
- (iii) Graveyards and cremation grounds
- (iv) Otherwise barren

(2) Cultivable Land:—

- (i) New fallow
- (ii) Land prepared for sugarcane
- (iii) Old fallow
- (iv) Groves
- (v) Forests
- (vi) Other forests with details of timber, trees and other trees.

(3) Cultivated Area:—

- (i) Irrigated—(a) From canals, (b) from wells, (c) from tube-wells
- (d) from reservoirs, (e) from other sources.
- (ii) Unirrigated.

2. Basis of Assessment of Revenue

The revenue is levied by means of cash demand on each unit assessed. The basis of assessment is defined under present arrangements in a variety of ways, as the 'net produce', the 'net assets' the 'economic rent', the 'rental value' and the 'annual value'. Sometimes two or more of these mean the same thing, sometimes different meanings are attached in different places to one or the other. . . . The original settlements which were based on a great variety of factors, such as crops and soil values, and the expenses of cultivation, have been replaced by resettlements, which are based mainly on the prices and general economic factors. In carrying out these resettlements increasing degree of importance has been given to annual value as ascertained by records of leases and sales and other similar factors."¹

(a) Assessment Under Zamindari

Under the zamindari system, the demand is assessed on the village estate owned by a single proprietor or by a body of co-sharers. This demand is a definite sum payable in perpetuity or for a fixed term of years, during which the whole of any increased profit which may accrue is enjoyed by the individual landlord.

The principle underlying the assessment in Bengal, Bihar and Orissa was that State was entitled to the entire rental, except the expenses which would have to be incurred by the zamindar and a small margin of his profit. It was on this understanding that the State claimed 9/10 or 10/11 of the rental, leaving the remainder for the zamindar as a surplus for himself. The revenue demand for Bengal, Bihar and Orissa was fixed at Rs. 268 lakhs. Dr. Radha Kumud Mukerjee comments on this that the Company based their revenue demand on their needs and not on the facts of actual zamindari receipts of ryoti rentals of those days The assessment . . . was based on the collections of previous years and there is nothing to show that the proportion which the revenue bore to the gross assets of each estate had ever been ascertained with any approximation to authority."²

(b) Assessment Under Ryotwari

Under the ryotwari system the assessment is on each field as demarcated by the survey. The assessment is on land and does not depend on the kind of crops grown. The soil is first classified according to the capacity, and then the normal yield as calculated on each class of soil after a series of experiments, and this is then converted into money value not at the current rates which may be abnormal, but at the average of prices prevailing in the preceding 20 years (excluding famine years).

¹ *Taxation Enquiry Committee Report*, p. 85.

² R. K. Mukerjee's note on 'Indian Land System' in *Bengal Land Revenue Commission Report*, Part II, p. 219.

In Madras, for the purposes of assessment, the share of the produce payable to the Government—one-half or one-third or whatever there prevailed in each estate—is first ascertained and then converted into cash on the basis of prices prevailing in the year preceding the settlement. Estimation of the net profit of each cultivator is made. To obtain this, various deductions are made from gross produce, so as to allow for seasonal variations, unproductive areas, cost of cultivation. Of the net profit thus arrived at, 50% is claimed as maximum Government share. The land revenue is settled every 30 years but enhancement is not permissible unless prices have risen or the Government has made improvements like railway construction, etc. The maximum enhancement permissible is $18\frac{3}{4}\%$.

In Bombay the whole process of delimitation of boundaries, determination of survey numbers and classification of soils is gone through for making assessment. This is at first group classification of land based on a number of factors like configuration, climate, rainfall, standard of cultivation, labour supply and wages, variations in the cultivated area during the past 30 years, prices, crop yields, expenses of cultivation and rental values, etc. This classification is known as 'Anna-wari' classification, standard land being called '16-anna land'. A standard rate of assessment is fixed with respect of such land but it is not to exceed 25% of the preceding year's average rentals of the lands in question. The assessment of each holding depends on its class. If it is '12-anna' land then the rate applicable to it will be three-fourths of the 'standard rate'.

In Bombay the amendment to the Bombay Land Revenue Code (1939) has recognised 'rental value' as the basis of assessment. It has laid down (1) the term of settlement should not exceed 50 years except when a revision is (in the opinion of the Government) inexpedient; (2) Rules should be formulated for classifying lands in a *taluka* or district into certain groups for purposes of assessment; (3) The 'Standard rates' for each group should be so fixed that the aggregate assessment on it should not exceed 35 p. c. of the previous year's rental value; (5) The revenue liability should be determined from the aggregate to the detail with the help of *annawari* classification; (5) Increase in rental value due to improvement in the land effected by the holder should not be taken into account for purposes of raising the assessment; (6) It empowers the Government to charge the land revenue demand in any year on the basis of a change in agricultural prices.

(c) Assessment Under Mahalwari

The *Mahalwari System* (particularly in the Punjab) aims at fixing a moderate revenue to be paid by each village as a whole. The basis of assessment is 'net assets.' The maximum revenue demand which was originally fixed at one-half of the net assets was reduced to one-fourth in 1928 and net assets were defined to mean the estimated average annual surplus produce of an estate or group

of states after deduction of the ordinary expenses of cultivation. The net assets are calculated on the basis of rents paid by the tenant cultivators who usually pay a fixed share of the produce. These estimates are then checked up with reference to the cash-rent prevailing in the assessment circle. The produce estimate is based on several factors, viz, the average of all crops sown and matured, the average yield per acre of each of these crops, the average obtainable in the village and the actual share of the gross produce received by the landowners. The net assets are thus calculated upon *landlord's rental* and not upon *owner cultivator's profits*. The assessment for the circle having thus been determined, is thereafter distributed village by village and for all the holdings in due consultation with landlords.¹

(iii) Collection of Revenue

Owing to the abject poverty of the cultivators and practice of obtaining two main crops during the year, the land revenue is generally recovered not by a single annual payment but in instalments, the dates and amounts of which are determined according to local conditions so as to suit the convenience of the revenue payers. For the recovery of the sums or arrears not paid by the fixed date the Government has extensive powers conferred by law including compulsory attachment and sale.

Though the assessment is fixed with reference to average seasons and conditions during the period of the settlement, exceptional disasters, widespread or local, such as floods, blight, total failure of rains or of the sources of irrigation, or collapse of prices of agricultural produce are apt to upset all calculations. In these circumstances relief graduated according to the degree of crop failure is necessary and may take the form of suspension or remission (partial or total). The Government of India has laid down the principles to be followed by local Government, in case of suspension or remission of land revenue, according to which relief will not ordinarily be required when there is half a normal crop. The total relief is to be granted where the crop is less than a quarter of the normal. No relief is to be ordinarily given to the revenue payer of the landlord class, unless it could be ensured by legislation or otherwise that a proportionate share of the relief is extended to the actual cultivators of the soil. The suspended revenue may be recovered or remitted according to the nature of the succeeding harvest. The Famine Commission of 1901 observed with regard to the cultivator, "In good years he has nothing to hope for except a bare subsistence; in bad years he has to fall back on public charity or has to borrow from the village moneylender at exorbitant rates of interest to pay off the revenue to the Government; for he has to pay the land revenue in two instalments, one before the 15th January and the other before the 15th March."

¹ *Report of the Land Revenue Committee in the Punjab*, p. 7.

The Incidence of Land Revenue

The incidence of the revenue charges varies according to the nature of settlement, the basis of assessment, the class of tenure and the type of holding from one part to another. Owing to the variations in the systems followed between States and even between one district and another, it is not possible to obtain any general idea about the land revenue charges. Five possible criteria may be applied, *viz.*, (1) the ratio borne by the land revenue to the population; (2) the ratio borne by the land revenue to the occupied area, *i.e.*, the average assessment per acre; (3) a comparison of assessment per soil unit; (4) the ratio borne by the assessment to gross or net produce; and (5) the ratio borne by the assessment to rents or annual value. The Taxation Enquiry Committee accept the last as the least unsatisfactory method but, even in this respect, owing to the absence of the full and reliable data, they are unable to arrive at any definite conclusion regarding the actual burden of assessment in the different States.

There is a great disparity in the burden of the land revenue. Forty years ago the Government of India were invited in an influentially signed memorial to fix one-fifth of the gross produce as the Government's maximum demand. In reply to this memorial the Government of India issued a resolution in 1905 in defence of their land revenue policy, which asserted that "under the existing practice the Government is already taking much less in revenue than it is now invited to exact."¹

It can be safely maintained that there has been a continuous rise in land revenue and that its incidence tends to be inequitable, according to Dr. R. K. Mukerjee, "In Madras, Bombay and U. P., in particular, assessments have gone up by leaps and bounds."² Even if prices go up small cultivators are not in a position to reap the benefit, as their produce is practically mortgaged to the Sahu-kar. Moreover, prices fluctuate but rent and revenue payments are relatively inelastic. After a comparison of increase in land revenue with the index number of agricultural incomes per head, Dr. Mukerjee concludes, "While the agricultural income during three decades increased roughly by 30, 60 and 23 p.c., the land revenue increased by 57, 22.6 and 15.5 in U. P., in Madras and Bombay respectively. Such a large increase of land revenue coupled with its commutation in cash and its collection at harvest time has worked very unfavourably on the economic condition of the cultivators of uneconomic holdings who form the majority of

¹ The resolution embodied the following principles:—

(1) In Zamindari tracts the standard of 50% of the assets is more often departed from on the side of deficiency than excess. (2) The state does not hesitate to legislate in the interest of the tenants in the Zamindari tracts against aggression by landlords. (3) In Ryotwari tracts the policy of long-term settlements is being extended. (4) Local taxation is neither immoderate nor burdensome. (5) Over-assessment is not a general or widespread source of poverty and cannot be regarded as a contributory cause of famines.

² R. K. Mukerjee, *Op. Cit.*, p. 206.

these provinces."¹ In Bengal, the land revenue was £ 811,000 in 1764-65 and £ 1,470,000 in 1765-66 and was raised to £ 3,000,000 in 1793 under the Permanent Settlement. The total land revenue increased from £ 15.3 millions in 1857-58 to £ 20 million in 1911-12 and to £ 23 million in 1936-37. Rent in Bengal increased by 160% between 1793 and 1940, and the increase in the net income of the zamindars has been even greater, from Rs. 20 lakhs in 1793 to Rs. 832 lakhs in 1940, which means an increase of 4160 per cent.² According to Dr. Mukerjee the landlords appropriated during last one and half century no less than Rs. 1,800 crores. Similarly in U. P. the State's share of rent came down from 90% in 1793 to 39% in 1946. The increase in the rental demand between 1893-94 and 1943-44 was about 42% and in the land revenue only 15%, the margin of profit of the intermediaries having increased by 70 per cent.³ Thus the burden of rent on the peasants increased from Rs. 12.24 crores in 1893-94 to Rs. 17.53 crores in 1944-45, the major portion of this increase was appropriated by the intermediaries. The peak of profits for the landlords was reached in 1929-30 when with a rise in rent of 58% and a corresponding rise of 19% in revenue, the landlords' profits increased by 96 per cent.⁴ These figures, however, does not depict the true burden on the ryots.

The following table gives the incidence of land revenue per cultivated acre and per head of population in important States in 1953-54.⁵

State	Land Revenue (Rs. Lakhs)	Per Capita Land Revenue (Rs.)	Per Acre Land Revenue (Rs.)
Assam	178	2.75	2.44
Bihar	285	1.10	1.04
Bombay	678	3.60	1.45
M. P.	442	3.74	1.31
Madras and Andhra	745	2.80	1.84
Orissa	98	1.00	0.58
Punjab	155	2.18	1.12
U. P.	1,891	4.37	4.30
W. Bengal	135	1.21	1.04
Hyderabad	480	5.04	1.34
M. B.	322	6.58	2.50
Mysore	118	2.06	1.13
PEPSU	97	4.46	1.90
Saurashtra	274	15.45	3.19
Rajasthan	282	2.72	0.77
Travancore-Cochin	63	1.96	2.17

1 *Ibid*, p. 345.

2 Quoted by P. N. Driver, *Problems of Zamindari and Land Tenure Reconstruction in India*, 1949, p. 63.

3 H. D. Malviya, *Land Reforms in India*, p. 101.

4 *Report of the U. P. Zamindari Abolition Committee*, 1948, p. 346.

5 *Indian Agriculture in Brief*, 1956, p. 12.

Is Land Revenue a Burden ?

There is one school of thought who maintain that the land revenue is not a burden. Historically the charge is considerably less than it was either under the Hindu or the Muslim rulers. Thus Manu took from 1/12th to 1/6th of the *gross produce* and in times of war and other calamities as much as 1/4th.¹ The share was more under the reign of Akbar. The British fixed the maximum demand at one-half of the *net assets*, though actually it came to less than 30% of the rental.

The supporters of this system maintain that :

(i) The burden of land revenue per acre as well as per head of population is extremely low as compared with what it used to be in the past ; it is insignificant ;

(ii) It is asserted that even if this burden is abolished it would go to a class of rent-receivers and would not benefit the actual cultivators ;²

(iii) The prosperity of the cultivators has increased under the British rule while the tax burden was reduced ; and

(iv) The land revenue is not a tax but rent and as such it does not enter into the cost of production and does not effect the prosperity of the cultivator.

But contrary to these arguments we place down certain observations which go to prove that the land revenue is really a burden and it is very heavy :—

(i) Under the Hindu and Muslim rights land revenue was fixed and known in produce, the burden varied with the capacity of the assessee to pay. At present even though remissions and suspensions are granted, the charge being fixed in cash, became very burdensome especially when the prices are low. Besides the amount and methods of collection are much more rigid.

(ii) The pressure on land considerably increased during the British period due to increase in population and decay of handicrafts. Even after a high percentage of gross produce was taken away by the Indian rulers, the total produce being very large, the residue was enough to maintain them in their customary efforts. But now the land area per family is very small so that even the total produce is insufficient for maintenance of the family. Even a small portion of this supply, if taken away, may impose painful burden on the family resources.

1 *Taxation Enquiry Committee Report*, 1924-25, p. 39.

2 V. Anstey, *Economic Development of India*, p. 377.

Defects of Land Revenue System

The Indian land revenue system suffers from a number of defects, which may be enumerated as below :—

(i) Not only the burden is oppressive on the majority, but the incidence of it is also not uniform and the inequalities do not bear any relation to the productive capacities of the land, e.g., in West Bengal it is Rs. 1·04, in other areas it is Rs. 2·44 in Assam and Rs. 2·50 in Hyderabad, Rs. 4·30 in U. P. and Rs. 3·19 in Saurashtra per acre of land.

(ii) It violates the law of equity as there is no minimum exemption and no progression. However, many States have recently introduced Agricultural Income-Tax and incomes besides the land revenue.

(iii) The system lacks elasticity as the land revenue is fixed permanently or for a long period ranging from 20 to 40 years.

(iv) The basis of assessment is not just, profits should be the basis. No allowance is made to the labour of the cultivator and his family.

(v) The land revenue is assessed not on the actual tiller of the soil but on those who have turned absentee landlords. This has given rise to a vicious tenancy system.

(vi) The method of collection is also very rigid. The inelastic nature of the time of payment and rigidity of assessment are responsible for the deterioration in the economic conditions of the ryots.

Whatever be the nature of land revenue, one thing is clear that it must be adjusted within the taxable capacity of the cultivators and it must be levied in accordance with the 'Equity' canon of taxation.

Who is the Owner of Land in India?

The Imperial Gazetteer of India states that in the pre-British era, "The prevailing custom was for the cultivator to deal direct with the representative of the State and the whole of the economic rent passed straight from one to the other. Even when there was an intermediary . . . he seldom received any substantial share of the profits of cultivation and such dues as he might intercept would more fittingly be classed as fees or perquisites than as rent in the proper sense of the term." As the British Government inherited the rights and privileges of the former indigenous States, the Gazetteer goes on to say that "whereas in most countries the land revenue is an assignment from the rent made by the landowners to the Government, in India the rent is historically speaking a relinquishment of a part of the profits of land by the Government to the landowners."

If the aforesaid argument be correct it follows that the Government is the sole proprietor of all land in India. Whatever may be the historical accuracy of such a theory the British Government in India had never claimed to be the ultimate owner of land. As Baden Powell puts it, "Nowhere and under no revenue system does the Government claim to take the unearned increment or the whole of what remains after the wages of labour or cost of cultivation and profits of capital have been accounted for." The Government really claims land revenues on the ancient right of the State to a share of the produce of the soil. In fact the British Government has in explicit terms conferred and recognised the proprietary rights of the landlord and the village owners. It follows, therefore, that the State in India cannot be regarded as the owner of the land. Legally speaking land belongs to the zamindars in the permanently settled areas, to the ryots in the ryotwari areas and to the village communities in the mahalwari areas. The Taxation Enquiry Committee was unanimously of the opinion that "under both the Hindu and the Mahomedan rule the State never claimed the absolute or exclusive ownership of the land . . . in the case of land under Permanent Settlement the Government have now no proprietary right." The same is the position in ryotwari and other temporarily settled areas. Regarding the zamindari tract, Baden Powell points out, "The Government has definitely stated that the property right in the soil has been declared vested in the land-holders." In the Ryotwari districts, the State has a "residuary right" with regard to vacated and wasteland, but has no power to eject a cultivator "except as a result of the process in default of revenue payment". Hence, he concludes, "the recognised ownership" of Government does not exist at all in a large part of India, and in other parts only in a very qualified manner".¹

Whether Land Revenue is a Tax or a Rent

A question that is frequently debated is whether the land revenue in India is a tax or rent. If the theory of State landlordism is rejected it follows that land revenue is a tax and not rent. On the other hand, if the State be considered to be the proprietor then it is rent. The views of Baden Powell and other writers seem to show that the State in India cannot be regarded as an ultimate proprietor from which it follows that land revenue is a tax and not rent.

Certain other arguments may be stated in this connection. Some writers argue that land revenue is not a tax because it remains

¹ Quoted by V. Anstey, *Op. Cit.*, p. 375

fixed for long periods and is not altered annually according to the revenue requirements of the state, which is a characteristic feature of all tax-systems. Against this argument it may be pointed out that there is nothing to prevent the State from changing the land revenue annually in the ryotwari areas except "considerations of policy, expediency and economy."

A further argument in support of the view that land revenue is a tax is that the process of assessment and collection is similar to that of a tax. This is a trivial argument because the procedure of assessment and collection cannot indicate the real nature of land revenue. In the permanently settled districts there are certain areas which are directly in charge of the Government. They have been mostly obtained by purchase from the zamindars and are known as *Khasmahal* estates. The separate administration of such estates by the Government is a clear indication that the Government does not consider itself the proprietor of all land in India.

In all modern States of non-communistic character the right of private property in the means of production and distribution is clearly recognised. So long as the existing economic order in India continues unchanged, there is no reason why land should be an exception to the general rule. No practical conclusion and no differentiation of policy can be based on the correctness or otherwise of the theory that land in India belongs to private persons and not to the State. We can conclude, therefore, that the 'tax *versus* rent' controversy is a "profitless war of words."

Recent Taxation Enquiry Commission and Land Revenue

The T. E. C. was set up by the Central Government under Dr. John Mathai to examine the land tenure in India in 1953. This Commission observed that, "recent developments have set new tasks to the administration of the State while others have involved significant changes in the agrarian pattern of the country. Two of these developments have been the political integration of the former Princely States and the important measures of tenure and tenancy reforms undertaken by the States. In the Princely States, the degree of political and administrative efficiency had varied greatly and there was wide diversity in their land revenue systems and tenancy laws. This calls for measures to create some sort of uniformity in these matters. Again, the abolition of the basic intermediaries has brought into the foreground the questions of setting the rate of land revenue for the individual cultivators, and of fixing the agency to be employed by the State for the purpose of collecting land revenue, for compiling village records and for discharging other administrative functions. Further,

resettlements have fallen due during the last 20 years in the non-permanently settled areas."

The Commission held that in view of the financial needs of the State Governments for implementing their development schemes, it is difficult to envisage any real substitute for land revenue. The States realise about Rs. 70 crores from this source and no alternative method is likely to yield an equivalent amount. But at the same time the Commission feels that, while there are bound to be differences in the land revenue systems of the different States, it will be both advisable and feasible to aim at a minimum degree of uniformity in matters like nature of tenure, manner of initial fixation of assessment, method of revenue of assessment. The Commission has, therefore, made the following recommendations with regard to the future pattern of land revenue :—

(1) Initial settlement including survey and classification is indispensable and should be undertaken in all areas where one or more of these operations remain to be conducted. No particular basis for determining land revenue at the initial settlement is recommended. The basis in operation in the adjoining State or area could be adopted.

(2) The basic pattern of settlement and revision while largely similar to the existing *ryotwari* pattern should make a departure from it in significant respects. Revisions of settlement should be within strictly defined limits and should be based not on small units and local prices but on the State as a whole or within the State on homogeneous regions.

(3) Within the limits set for revision, the standardized assessment should continue indefinitely. The State Government should not levy surcharges over and above it and all surcharges on the standardized assessment should be by Local Bodies and for Local Services.

(4) The present levels of assessment should be first standardized over the State as a whole and the standardized assessment then revised State-wise, a region-wise, at reasonable intervals.

(5) Once assessment levels have been standardized, land revenue should be revised once in 10 years with reference to changes in the price-level; a change in prices by 25% in either direction should not call for any adjustment in land revenue demand. If prices rise by more than 25%, land revenue should be increased by a minimum of half-anna in the rupee to a maximum of two annas in the rupee. If prices decline, the reduction should be effected by a minimum of one anna in a rupee to a maximum of four-anna in the rupee.

(6) From land revenue, an amount of not less than 15% should be earmarked by local bodies, the allocation to be made out by the revenue collected from the area of a particular body.

(7) It may be possible to collect land revenue in kind from the co-operative societies. The present administrative machinery for the collection of land revenue has been evolved through years of experience and on the whole has been efficient. There is no objection to collection of land revenue being entrusted to the village *panchayats* on a commission basis. This might be done wherever feasible. Hereditary village officers should be replaced by stipendiary village officers.

LAND REFORMS

That the present land system prevailing in India retards our agricultural efficiency and makes it impossible to effect technological improvements in production is conceded by agricultural experts and economists. Dr. Mukerjee has observed that, "the standard of living of the Indian peasants cannot rise until a change in land system supplies the essential economic basis of more efficient peasant farming. Neither scientific agriculture nor co-operation can make much headway unless we reform the land system."¹ Sir Nanawati says, "No scheme of agricultural planning for the post-war period would achieve material results if it overlooks the adverse effects of a defective land-tenure system on the productivity of the land." He further opines, "Zamindari institution is too obsolete to fit into any government organisation. Any attempt to enforce such a measure would not only fail to benefit the people but will meet with friction and disharmony at every step and be a perpetual source of embarrassment to the Government."² As far back as 1899 even Dr. Voelcker pointed out that defective land system is one of the causes of the low productivity of agriculture in India. The National Planning Committee observed in the same vein that, "Ownership in all forms of natural wealth must belong to and vest absolutely in the people of India collectively..... No intermediary parasites—zamindars, talukdars, malguzars, etc., should be recognised..... All rights belonging to these classes be bought out and steps taken to consolidate all holdings into standard units and minimize the human effort involved. No sub-division of agricultural land by any incidence of inheritance, mortgaging, or alienation should be permitted."³

The Agrarian Reforms Committee made the following recommendations regarding the land reforms to be taken in India :—

(i) Intermediaries between the State and the cultivators should be abolished and land released by the expropriation of zamindars should be distributed among the peasant occupiers with restrictions on their powers to sub-let.

(ii) Maximum and minimum size of holdings should be fixed and those owning less land than the minimum size of holdings fixed by the State, should be resettled on co-operative basis on unused land.

1. R. K. Mukerjee, *Land Problems of India*, p. 1.

2. Minute of Dissent by Sir Nanawati, in *Famine Enquiry Commission Report*, pp. 348-75.

3. N. P. C. *Report on Land Policy & Agriculture*, pp. 48-9.

(iii) Village communities should be organised for land management and agricultural development.

(iv) Minimum wages for agricultural labourers should be fixed.

(v) Agricultural prices should be stabilized and minimum prices for agricultural produce should be fixed.

(vi) A well-thought-out policy and scheme of developing rural industries should be put into operation so as to remove the surplus population from the soil and raise rural income.

(vii) The burden of taxation that the cultivator has to bear should be in accordance with his ability. It should be elastic so as to vary with the climatic and other conditions of the region and with the changes in price levels.

Before we discuss the various measures undertaken in the country towards solving the land problem, let us see how land reforms have taken place in foreign countries. The different countries may be grouped according to general character of measures undertaken in two broad divisions : (i) The Capitalistic way, and (ii) the Socialistic way.

(i) Under the capitalistic school, we may include the U. S. A., U. K., Germany, France, the Netherlands, Denmark, and the Scandinavian countries. The striking features of land reforms in these countries are, mainly speaking, the consolidation of holdings, land reclamation and settlement, expansion of credit facilities, security of tenure, fixation of fair rents and regulation of landlord-tenant relations.

(ii) The countries that come under the socialistic way in land legislation are the Central and Eastern European countries including Soviet Russia and some of the Baltic States. In these countries, the estates were expropriated with or without compensation, and distributed among landless labourers and those with dwarf holdings. The measures no doubt differ from country to country. In Soviet Russia the reforms were revolutionary. In Bulgaria, Hungary and Finland, the reforms were moderate, whereas in Poland, Czechoslovakia they were radical. These countries have more or less accepted *inter alia* the eradication in inequitable distribution of land and the levelling up of agricultural incomes. A study of the situation in these countries brings out the fact that the utility of all such reforms is to be measured by the amount of surplus happiness it ensures to the average man. It is beyond all controversy that a man should not be allowed to own so large an estate or property whose owner exercises power by its sheer magnitude and that it must be derived from personal

effort organised in such a way as to involve addition to common welfare.

Ownership of property in a civilised society is recognised to be related to performance of duties and possession of virtues. Hence, it is argued that ownership and cultivation should not be divorced and that land must be held by those who till, all intermediaries being done away with so as to ensure the inauguration of an era of economic and social peace. The introduction of progressive reforms is only another method of avoiding economic and social chaos.

Broadly speaking the following measures have been taken by the European Governments towards the agrarian reforms :—

(1) Buying of big estates and setting up of small cultivators thereon,

(2) Putting restrictions on the transfer of land,

(3) Imposition of low rental so that landowners who do not cultivate may have no incentive to hold the lands,

(4) Financial assistance to tenants to buy land,

(5) Creation of non-attachable farm properties,

(6) Prohibition of attachment or division of properties by the declaration of the owner to the judicial authorities that the said properties are 'family properties,'

(7) Preventive measures against the division of land on succession,

(8) Reclamation of wastelands and the release of Government-owned lands for cultivators.

Along with these reforms, there has been a widening of social services, such as education, health services so as to improve the general living conditions.

According to the Planning Commission, the broad objectives of land reforms policy in the country are :

(i) Augmentation of agricultural production by a better system of land management ;

(ii) Reduction of inequalities in opportunities and income ;

(iii) Provision of security of tenants including opportunities for them to become owners of land they cultivate ;

(iv) Improvement of the position of agricultural workers ; and

(v) In general, the raising of living standards in rural areas.

In India land reforms have been undertaken on the following lines :—

1. Abolition of Zamindaris and other Intermediaries.
2. Tenancy Reforms and the reconstruction of the land systems. Regulation of rent.
3. Fixation of the ceiling of Agricultural holdings.
4. Re-organisation of agriculture, and Co-operative Farming.
5. Development of co-operative land management.

We shall now discuss each of these problems in detail in the following pages.

1. Abolition of Intermediaries

The existence of intermediaries between the State and the tillers of the soil has retarded the development of agriculture. The State Government, therefore, decided to abolish zamindari rights, legislation for the abolition of the rights of zamindars and other intermediaries has been enacted in all Part A States and in Hyderabad, Jammu and Kashmir, Madhya Bharat, Rajasthan, PEPSU and Saurashtra. Similar steps have also been taken in a number of other States.

The implementation of this legislation has not been easy. In many places its validity was challenged by the landlords. Their main objections to the legislation were : (1) that it did not strictly fulfil a public purpose, (2) that the legislatures were not competent to enact the legislation, (3) that the compensation provided for was inadequate, and (4) that it violated the Fundamental Rights in regard to the enjoyment of private property. In fact, some of the enactments were declared *ultra vires* of Article 31 of the Constitution which provides for compensation in case private property is acquired by the State, (5) apart from legal difficulties, want of village records and a suitable administrative machinery also hampered the progress of land reform, (6) finally there was the problem of compensation. In the States which had abolished the intermediary rights, it aggregated to more than Rs. 450 crores. Immediate payment of this enormous amount was beyond the limited resources of the States which were heavily committed to development schemes, (7) the inability of tenants to pay for the acquisition of ownership rights (8) the traditional individualism of the farmer and his attachment to land, which retarded the pace of such reforms as consolidation of holdings and development of co-operative farming, (9) growing pressure of population on land the absence of alternative avenues of employment were other difficulties in the way of abolition of zamindaris.⁵ In spite of these handicaps, the States have done well.

The legislation for the abolition of intermediaries has been :

(i) *Fully implemented* in Madhya Pradesh, Punjab, Hyderabad PEPSU and Bhopal.

(ii) *Substantially implemented* in Andhra, Bombay, Madras, Uttar Pradesh, Madhya Bharat and Saurashtra, and

(iii) *Partially implemented* in Bihar, Orissa, Rajasthan and Vindhya Pradesh.

The Compensation

The method of assessing compensation and the mode of its payment differ from State to State. The unit for determining the amount of compensation is the "individual" proprietor in Bihar and Uttar Pradesh and the "estate" or "tenure" in Assam, Madhya Pradesh, Madras, Orissa and Madhya Bharat.

Compensation is calculated on the basis of "net income" in Assam, Bihar, Madhya Pradesh, Orissa, West Bengal, Madhya Bharat, Rajasthan, Bhopal and Vindhya Pradesh; "net assets" in Uttar Pradesh; and "basic annual sum" in Andhra and Madras. "Net income" and "net assets" are calculated by deducting the expenses of estate management, land revenue, cess, agricultural income tax, etc., from the total income of the zamindar. The "basic annual sum," on the other hand, is based on the gross annual ryotwari demand.

Compensation represents a multiple of "net assets" or "net income" This multiple is 8 in Uttar Pradesh, 7 in Rajasthan and 10 in Madhya Pradesh (other than merged territories). In Madhya Bharat, it is 8 for the zamindari areas and 7 for the Jagirs.

In these States, in addition to compensation, rehabilitation grants will be given to the intermediaries in the low-income groups. In Madhya Bharat, however, rehabilitation grant is allowed only to zamindars on a sliding scale basis. In other States, compensation is fixed on a sliding scale, the multiples varying as under :

Assam 2 to 15 ; Bihar 3 to 20 ; Madhya Pradesh (merged territories) 2 to 10 ; Madras $1\frac{1}{2}$ to 30 ; Orissa 3 to 15 ; and West Bengal 2 to 20 ; U. P. 8 to 28 ; Madhya Bharat 6 to 18.

The mode of payment depends upon the amount of compensation and the resources of the State. In Assam, Bihar, Bombay, Uttar Pradesh, West Bengal and Rajasthan payment is made in cash or in bonds, or partly in cash and the rest in bonds. The bonds are transferable and negotiable and are also redeemable in periods varying from 20 to 40 years.

In Orissa, compensation together with interest at the rate of $2\frac{1}{2}$ per cent is payable in 30 equated instalments. In Madhya Bharat, compensation is to be paid in instalments in 10 years. In Madras, the amount of compensation is deposited with a special tribunal which distributes it among the people concerned. All compensation is paid partly in cash and the rest in non-negotiable bonds carrying 3 per cent interest per annum, payable in 20 annual instalments. In Hyderabad, payment is made in cash in 10 to 20 annual instalments, in Saurashtra in 15 instalments and in Bhopal in 3 to 9 instalments.

The total amount of compensation payable by the States is calculated to be Rs. 460·3 crores—of which 370·4 crores has been estimated for the States where legislation has been enacted and Rs. 89·9 crores will be given as rehabilitation in grants to the smaller landlord.

The following table gives the Compensation and Rehabilitation Grants payable to the Intermediaries in various States :—

Tabular Representation of Compensation and Rehabilitation Grants Payable to Intermediaries in Various States

Estimated Amount of Compensation								
(In crores)								
Serial No.	State	Rate of Compensation			Compensation	Rehab. Grant	Total	
1	2	3			4	5	6	
1	Andhra	If the basic annual sum ¹ of an estate does not exceed Rs. 1000			30 times the basic annual sum	8.0	...	8.0
		Exceeds	Rs. 1,000	but not Rs. 3,000	25 do			
		"	Rs. 3,000	" Rs. 20,000	20 do			
		"	Rs. 20,000	" Rs. 50,000	17½ do			
		"	Rs. 50,000	" Rs. 1,00,000	15 do			
		"	Rs. 1,00,000	"	12½ do			
2	Assam	If the net income of an intermediary does not exceed Rs. 1,000			15 times the net income	5.0	...	5.0
		Exceeds	Rs. 1,000	but not Rs. 2,500	12 do			
		"	Rs. 2,500	" Rs. 5,000	11 do			
		"	Rs. 5,000	" Rs. 7,500	10 do			
		"	Rs. 7,500	" Rs. 10,000	9 do			
		"	Rs. 10,000	" Rs. 15,000	8 do			
		"	Rs. 15,000	" Rs. 30,000	7 do			
		"	Rs. 30,000	" Rs. 50,000	6 do			
		"	Rs. 50,000	" Rs. 1,00,000	5 do			
1 The Madras Scheme is to carry out first Ryotwari settlement in the Zamindari estates. The basic annual sum will consist of about one third of the Ryotwari assessment levied in the lands comprised in the estates.								
1 A. I. C. C. Economic Ratings, Vol. III No. 3 (June 1, 1956), pp. 30-32								
		Exceeds	Rs. 1,00,000	" Rs. 3,00,000	3 do			
		"	Rs. 3,00,000	"	2 do			
3	Bihar	If the net income of an intermediary does not exceed Rs. 500			20 times the net income	158.0	...	158.0
		Exceeds	Rs. 500	" Rs. 1,250	19 do			
		"	Rs. 1,250	" Rs. 2,000	18 do			
		"	Rs. 2,000	" Rs. 2,750	17 do			
		"	Rs. 2,750	" Rs. 3,500	16 do			
		"	Rs. 3,500	" Rs. 4,250	15 do			
		"	Rs. 4,250	" Rs. 5,000	14 do			
		"	Rs. 5,000	" Rs. 10,000	10 do			
		Exceeds	Rs. 10,000	but no Rs. 20,000	8 do			
		"	Rs. 20,000	" Rs. 50,000	6 do			
		"	Rs. 50,000	" Rs. 1,00,000	4 do			
		"	Rs. 1,00,000	"	3 do			
4	Bombay	Rates of compensation vary according to the nature of the tenure: (i) In many cases, as in Bombay, Talukdari Tenure Abolition Act, 1949, the compensation will be fixed under the provisions of the Land Acquisition Act, 1894. (ii) In cases of Khoti Abolition Act, 1949, it is Rs. 2 per 100 acres to Rs. 5 per 100 acres. (iii) In the case of Maleki Tenure Abolition Act, 1919, it is 3 times the income. (iv) In the case of Bombay Service Inams (useful to community) it is equal to 10 times the land revenues.				4.0	...	4.0
5	Madhya Pradesh	10 times the net income of an estate and rehabilitation grants on the following scale :—				4.9	0.1	5.0
		When the aggregate sum ¹ does not exceed Rs. 25				Rs. 150		
		Exceeds Rs. 25 but not Rs. 40				6 times the aggregate sum		
		Exceeds Rs. 40 but not Rs. 60				Rs. 240 or 5 times the		

1 The aggregate sum payable by a proprietor is to comprise: (a) Land revenue payable for his proprietary share in the estate, mahal, alienated village land; (b) Land revenue payable on the portion of the home farm land retained with him; (c) Land revenue or rent payable on any lands held by him in the State.

Serial No.	State	Rate of Compensation			Estimated amount of Compensation (In crores)		
		1	2	3	4	5	6
6	Madras	If the basic annual sum of an estate does not exceed Rs 1,000			aggregate sum whichever is greater		
		Exceeds	Rs. 1,000	but not Rs. 3,000	30 times basic	60	...
		"	Rs. 3,000	"	annual sum	25	do
		"	Rs. 20,000	"	do	20	do
		"	Rs. 50,000	"	do	17½	do
		"	Rs. 1,00,000	"	do	15	do
7	Orissa	On the first Rs. 500 of the net income of an estate	Rs. 1,00,000	"	do	12½	do
		On next	Rs. 3,500	do	15 times the	9.0	...
		"	Rs. 3,000	do	net income	13	do
		"	Rs. 3,000	do	do	10	do
		"	Rs. 15,000	do	do	7	do
		"	Rs. 15,000	do	do	5	do
		On the balance	Rs. 15,000	do	do	4	do
8	Uttar Pradesh	8 times the net assets of an intermediary and rehabilitation grant on the following scale :—	...	...	do	3	do
		If the land revenue of all the estates of an intermediary is 20 times the net-assets up to Rs. 25	...	...	do	75.0	...
					do	150.0	...

9	West Bengal	Exceeds	Rs. 25	but not	Rs. 50	17 do
		"	Rs. 50	"	Rs. 100	14 do
		"	Rs. 100	"	Rs. 250	11 do
		"	Rs. 250	"	Rs. 500	8 do
		"	Rs. 500	"	Rs. 2,000	5 do
		"	Rs. 2,000	"	Rs. 3,500	3 do
		"	Rs. 3,500	"	Rs. 5,000	4 do
		"	Rs. 5,000	"	Rs. 10,000	1 do
		On the first intermediary	Rs. 500 of the net-income	of an		20 times the net-income
		On the next Rs. 500	do			18 do
		"	Rs. 1,000	do		17 do
		"	Rs. 2,000	do		12 do
		"	Rs. 10,000	do		10 do
		"	Rs. 15,000	do		6 do
		"	Rs. 80,000	do		3 do
		On the balance	...			2 do
10	Rajasthan	7 times the net income of a Jagirdar and rehabilitation grant on the following scale :—				
		If the gross income of a Jagirdar does not exceed Rs. 250	11 times the net-income			
		Exceeds	Rs. 250	but not	Rs. 500	10 do
		"	Rs. 500	"	Rs. 1,000	9 do
		"	Rs. 1,000	"	Rs. 2,000	8 do
		"	Rs. 2,000	"	Rs. 3,000	7 do
		"	Rs. 3,000	"	Rs. 4,000	6 do
		"	Rs. 4,000	"	Rs. 5,000	5 do
		"	Rs. 5,000	"	Rs. 20,000	4 do
		"	Rs. 20,000	"	Rs. 30,000	3 do
		"	Rs. 30,000	"	...	2 do

Progress of Abolition of Intermediaries¹

Progress has been comparatively easy in the temporarily settled areas (as in U. P. and M. P.) where adequate records and administrative machinery existed. In the permanently settled areas and in areas under Jagirdari settlements, land records and revenue administration had to be built up almost from the beginning.

The general pattern of abolition of intermediaries comprises the following measures :—¹

(i) Common lands such as waste-lands, forests, abadi-sites, etc., which belonged to the intermediaries were vested in the State Government for purposes of management and development.

(ii) Home-farm lands and lands under the personal cultivation of intermediaries were generally left with them and lessees of home-farms continued as tenants under them. In some States, tenants of home-farms of intermediaries were also brought into direct relation with the State and the rights of intermediaries over their tenancy lands were abolished. These include U. P., M. B. (Jagirdari areas), Delhi, Ajmer and Bhopal. In Rajasthan and M. B. an optional right to purchase ownership was given to such tenants. In most of the States, intermediaries were not allotted any land for personal cultivation over and above lands already in their cultivating possession. In a few States like Hyderabad, Mysore, Rajasthan, Saurashtra, Bhopal and V. P. intermediaries were allotted lands for personal cultivation if the area already held by them was less than that specified in the legislation.

(iii) In most of the States tenants-in chief holding land directly from intermediaries were brought into direct contact with the State with such exceptions as Bombay and Hyderabad and Mysore. In some States tenants possessed permanent and transferable rights and it was not necessary to confer further rights upon them—especially in Assam, W. Bengal, Bihar, Orissa, Bhopal and U. P. In other States like Bombay, U. P., M. P., Mysore, Delhi and Hyderabad the tenants were required to make payments in order to acquire rights of ownership. In Andhra, Madras, Rajasthan, Saurashtra, M. B. and Ajmer either larger rights were conferred upon tenants or their rents were reduced without any direct payment being required of them.

(i) *Assam*. Assam State Acquisition of Zamindari Bill which received the President's assent in July 1951 provides that from the date of notification with respect to any estate, the rights of the

¹ This section is based on various Progress Reports of the Five Year Plan.

² *The Second Five Year Plan* 1956, pp. 131-132.

tenure-holder in land, forests, bazars, etc., will cease and shall vest in the State. All arrears of rent, royalties, cesses and other dues, which were payable to the tenure-holder shall in future be recoverable by the State.

The total income of the Zamindars in the State, before the acquisition, came to Rs. 50,00,000 and they paid only Rs. 5,00,000 to the Government.

The proprietor or tenure-holder will be allowed to retain possession of homesteads (in his possession on the date of vesting), building and private land, subject to a maximum of 400 bighas.

Compensation to dispossessed proprietor or tenure-holder will be paid in multiple, of net income, in graded rates of compensation as provided in the Act.

There are provisions for payment of interim compensation every year which shall be deducted from the total compensation and balance, if Rs. 2,500 or less shall be paid in cash. In other cases $12\frac{1}{2}\%$ of the amount shall be paid in cash and balance in cash or bonds or partly in cash and partly in bond.

(ii) *Bihar.* The Bihar Land Reforms Act empowers the State Government to acquire the rights of proprietors and tenure-holders in their estates and tenures respectively by Notification from time to time.

On publication of the Notification, the estate or the tenure, including the building used as office or cutchery for the collection of rent, and interests in trees, forests, fisheries, jalkars, hats, bazars and ferries and all other Sairati interests, as also the interests in sub-soil, including any rights in mines and minerals comprised in such estates or tenures other than the interests of ryots or under-ryots, shall vest in the State free from all encumbrances.

Homesteads of the proprietors and tenure-holders will be retained by them, provided they were in their possession on the date of vesting and they will hold it free. If, however, such homestead is used for purposes of letting out on rent, collector will fix a fair and equitable ground rent for the same. Certain other lands in khas possession of the proprietors and tenure-holders, used for agricultural or horticultural purposes will be retained by them on payment of rent as ryots having occupancy rights. Further, they will be allowed to retain buildings used as golas (grain stores), factories or mills, etc.

As regards mines and buildings, lands, tramways and sidings appertaining to mines, they will be lessees of State on terms and conditions which may be agreed upon between them and the State.

The compensation to the dispossessed intermediaries will vary universally as the size of the net income and will be between 3 to 20 times of such income. The net income will be calculated by subtracting from the gross assets of an estate the land revenue, cesses and agricultural income tax paid to the Government and any sum paid as chaukidari tax. Besides these, cost of management of an estate or tenure and cost of works of benefits to the ryots of an estate or tenure, would also be deducted from the gross income to arrive at net income at the rate which again vary inversely as the amount of gross assets of various estates.

To the amount of compensation thus determined shall be added 50% of the arrears of rents including royalties, cesses and interest and the amount of compensation payable to a proprietor or tenure-holder in respect of mines and minerals. Interim payments, after the date of vesting and before the date of payment of compensation, shall be made monthly to the outgoing proprietors or tenure-holders in accordance with the following table :—

If the approximate payment does not exceed Rs. 50,000, 3% of this sum

If the approximate payment exceeds Rs. 50,000, 2½% of the sum

Total amount of compensation payable comes out to be Rs. 158·24 crores.

(iii) *Bombay*. In the years 1949, 50 and 51 as many as eight Land Tenure Abolition Acts were enacted to liquidate the special rights of the tenure-holders as to land and land revenue. These acts did not aim at acquisition of all lands and interests therein, as has been done in the U. P., Bihar, Madras, etc. These legislations applied to non-ryotwari tenures like bhagdari, narwadari, maleki, talukdari, khoti waris and watans, etc.

Bhagdari and nadwadari tenures being merely modes of collecting land revenue, were immediately abolished without payment of any compensation. The abolition of all other tenures such as talukdari, mahalwari makki, etc., where compensation is to be paid, is fast on way to completion.

All Land Tenure Acts follow a uniform policy in matter of compensation. The method of compensation adopted in the State are as under—(1) cash, (2) annuities and (3) non-transferable bonds. It has been calculated that estimated recurring revenue of Rs. 70,51,991 exceeds recurring expenditure of Rs. 18,88,861 and that the estimated non-recurring receipts (Rs. 1,12,00,392) cancel out practically the estimated non-recurring expenditure

(Rs. 1,13,51,917). These figures do not contain compensation payable to talukdars and kothis.

In September 1953, with a view to take over about 40 lakhs acres of land in 3,321 Jagir villages in the merged territories, the State Assembly passed the Jagir Abolition Bill. This would enhance the revenues of the State by Rs. 47 lakhs annually compensation would not be paid in cash but in transferable bond payable in 20 years at 3% interest. It has been estimated that nearly Rs. 71, 62, 211 will have to be paid as compensation.

(iv) *Madhya Pradesh*. A legislation designed to eliminate the various categories of intermediaries was enacted in 1951. By this measure—the M. P. Abolition of Proprietary Rights (Estates-Mahals Alienated Lands) Act, 1950 (I of 1951) proprietary right in about, 43,000 villages vested in the State Government by 31st March, 1951. The Act sought to acquire, free from all encumbrances, all rights, title and interest of the proprietor in land (cultivable or barren) forests, fisheries, wells, village sites, bazars, etc.

The scheme of payment of compensation to the dispossessed intermediaries is financially self-sufficient compensation will be at the flat rate of 10 times the net-profits and fund for the purpose is proposed to be gathered by the recovery of premium on a voluntary basis at a prescribed rate of 3 times the annual rent from absolute occupancy tenants and 4 times the annual rent from occupancy tenants.

For calculating compensation a minimum limit of net-profits has been fixed and it is 5% of the gross assets of a village.

Further in addition to the regular compensation for existing mines compensation at a minimum rate of 4 annas per acre is allowed to proprietors on account of the potential value of mineral rights which vest in them under the Waste Lands Sales Rules of 1864.

According to the Act the home farm land, known as Sir and Khudkasht, will be left with the outgoing proprietors in Malik Makbuza rights plot proprietorship, subject to the payment of land revenue.

(v) *Madras*. The first batch of estates was taken over by the Government on 7th September, 1949, five months after the Madras Estates (Abolition and Conversion into Ryotwari) Bill became law. It included the largest estates like Vijainagaram, Venkatagiri, etc., in the State. The Act provided for the transfer to the State of all permanently settled estates, free of all encumbrances, in the same manner as lands in Ryotwari areas.

Out of 4713 estates including under-tenure and Inam estates, which were affected by the Act, 4661 estates had been notified up to 15th January, 1955. The ryot in respect of his private land were allowed to have the rights of the holder under Ryotwari settlement.

The Act provided for the payment of compensation to the dispossessed intermediaries on a graded scale as fixed multiples of the basic annual sum, which would be ascertained after the completion of the Ryotwari settlement in the State. The Act also provided for the deposit of advance compensation, and up to 14th February, 1955 a sum of Rs. 2,29,07,704 had been deposited with Estate Abolition Tribunals at different places.

The net additional land revenue from the estates taken over is estimated to be Rs. 30 lakhs. The total compensation to be paid has been estimated at Rs. 15½ crores.

(vi) *Orissa*. Orissa Estates Abolition Bill, after being passed by the Assembly, received the assent of the President in January, 1952, and an amendment to it received the President's assent in August, 1952. In December, 1952, Jeyhore Estate in South Orissa with an area of 10,000 square miles and an income of Rs. 27 lakhs, one of the biggest Zamindaris in Orissa, vested in the State. The process of acquisition proceeded apace and the last of Orissa's big permanently settled estates, Rajgi of Kanika, with an area of 440 square miles and an income of Rs. 5 lakhs, vested in the State in 1953.

Till September, 1953, 16,45 estates had been taken over by the Government the gross income of which was estimated to be Rs. 65,21,400. Against this, the payment previously made by Zamindars to the Government was estimated to be Rs. 15,21,400. Thus extra income of Rs. 50 lakhs accrued to the State which was transferred to the Zamindari Abolition Fund to meet all the expenditure connected with the administration of the Zamindaris taken over and payment of compensation to the excluded Zamindars.

According to latest information available, the total number of estates acquired under the Orissa Estates Abolition Act comes to 13, 038.

Under Abolition Act, compensation to the dispossessed intermediary will be paid in multiples of net income varying universally as the size of such income (3 to 20 times the net income).

(vii) *Punjab*. Punjab Occupancy (Vesting of Proprietary Rights) Act, 1951, and the Punjab Abolition of Ala Malikiyat and Talukduri Act, 1951, enacted as President's Acts, came into force from June 15, 1952. These have been re-enacted as the Punjab Occupancy (Vesting of Proprietary Right) Act, 1952 and the

Punjab Abolition of Ala Malikiyat and Talukdari Rights Act, 1952. By virtue of these Acts, all titles, rights and interests, etc., of such landlords and Ala Maliks have since been extinguished and vested in the occupancy tenants and Adna Maliks respectively.

The landlords and Ala Maliks have been allowed compensation for their rights in those lands which will be determined by the collectors of the districts on receipt of application from the affected landlords and Ala Maliks.

Zaildari institution was abolished with effect from October 1952, and for the abolition of Jagirdari (which exists in certain areas) a bill was passed in the State Legislative in 1953.

(viii) **Rajasthan.** For abolition of Jagirs in Rajasthan, which covered about 80% of the area, the Rajasthan Land Reforms and Resumption of Jagirs Act, 1952, was passed and subsequently amended in 1954. The progress is as under :—

(1) In the territories of former Rajasthan, all settled as well as unsettled Jagirs an annual rental income of Rs. 200 and above have been resumed.

(2) All Jagir lands (settled as well as unsettled) in the areas commanded by the Bhakra Nangal Project have been resumed.

(3) In others areas, only settled Jagirs with an income exceeding Rs. 1,000 have been resumed.

Jagirdars with smaller incomes have been given relief in the assessment of land revenue on their Jagirs.

Provision has been made to facilitate the allotment of land for khudkasht to the Jagirdars.

The scale of rehabilitation grant for Jagirdars having annual income below Rs. 5,000 range from 5 to 11 times ; Jagirdars with smaller income getting more than those with larger income.

Jagirdars will be entitled to receive compensation for the resumption of their Jagirs at 10 times the net income, which is arrived at by making certain specific deductions from the gross income. It has been provided that the net income will in no case be below 40 per cent of the gross income.

(ix) **U. P.** On July 1, 1952, in accordance with the provisions of the U. P. Zamindari Abolition and Land Reforms Act, 1951, all the Zamindaris in U. P. vested in the State. Out of 4,13,00,000 acres (excluding the merged States)—the total area held by the zamindari—the Act provides for the acquisition of 3,90,00,000 acres by the State.

The Act was extended to : (i) enclaves of former princely States now absorbed in U. P., (ii) Government estates in the erst-while Benaras State and (iii) Rampur State on July 1, 1954.

From July 1, 1952 all the interests of the intermediaries, including their interests in cultivated land, grove-lands, waste-lands, forests, fisheries hats, bazars, etc., passed over to the State free from all encumbrances.

The Zamindars keep the land in their own cultivation *i.e.*, Sir and Khudkasht, trees upon such lands belonging to them in the abadi, groves and their private wells.

The rights of intermediaries have been acquired on payment of compensation at a uniform rate, namely, 8 times the net assets. Nearly Rs. 160 crores are to be paid by way of compensation to the Zamindars.

Compensation will bear interest at the rate of 2½ per cent but if its determination takes more than nine months, interim compensation could be paid. Interim compensation paid up to the period ending February 28, 1955, amounted to Rs. 5,07,05,106. This amount was paid to 3,24,368 intermediaries who applied for it. For rehabilitation of the smaller Zamindars, the Act provides for the payment of graded rehabilitation grants to intermediaries paying Rs. 5,000 and less as land revenue. It ranges from 20 to 2 times the net assets.

(x) **West Bengal.** Under the provisions of the Bengal Estates Acquisition Act of 1953 all estates and rights of every intermediary therein, including rights in sub-soil, mines, and minerals, hats and bazars, ferries, forests, fisheries, tolls and other sairati interests, vested in the State as from 1st Baisakh 1362 (15th April, 1955) free from all encumbrances.

The earnings of the State under the land revenue head would increase many times than what they had been before the *enforcement of the Act*. The Zamindars used to pay the Government annually a revenue of Rs. 1,12,00,000 as against Rs. 7,98,00,000 realised by them from the tenants as rent.

The entire cost that the State will incur for payment of compensation is not yet disclosed, but the maximum compensation to be paid by the Government for acquiring the holdings of the intermediaries will not exceed Rs. 12 lakhs in a single case.

Under the West Bengal Estates Acquisition Act, an intermediary can retain agricultural land up to 25 acres.

2. Tenancy Reforms

The tenants holding land under intermediaries are not in all cases cultivating their land. The intermediaries also do not

always cultivate their farm lands. Considerable acres have been leased out to sub-tenants. On the abolition of the intermediaries, the sub-tenancies still remain. In *ryotwari* areas of Bombay, Mysore, Berar as well as in the States of peasant proprietorship like Punjab, Pepsu and Delhi there are holdings held by ryots parts of which are sub-let. Considerable amount of the land is cultivated by tenants-at-will. They suffer from insecurity of tenure and excessive rents. Hence, in order to improve their economic and social conditions the Five Year Plan provided that :

(i) the existing tenants should be confirmed in the enjoyment of occupancy right: subject to the landlord's right to resume a limited area—not exceeding 3 family holdings—for personal use.

(ii) Only those who cultivate land themselves should be allowed to resume land, within a period of 5 years.

(iii) The tenants of non-resumable area should have the right of purchase ; the price being a multiple of the rental value payable in instalments. The Government should deal directly with the cultivators and collect land revenue as well as the price of the land.

(iv) Where land is managed directly by the substantial owners and there are no tenants in occupation, public interest requires the acceptance of two broad principles, *viz.*, (a) there should be an absolute limit to the amount of land which any individual may hold, and (b) the cultivation and management of land held by an individual owner should conform to the standards of efficiency determined by law.

(v) In future the tenancies should be for 5 to 10 years and be renewable. Rent should ordinarily not exceed one-fourth to one-fifth of the gross-produce.

The main recommendations of the First Five Year Plan on tenancy reform relate to :

- (i) Reduction or regulation of rent.
- (ii) Security of tenure ; and
- (iii) Grant of the right to tenants to purchase their holdings.

(i) Reduction or Regulation of Rent¹

The First Plan recommended that the maximum rent should not ordinarily exceed one-fourth or one-fifth of the gross produce.

¹ This section is largely based on *Land Reforms in India* issued by the Government of India (1955), and *Progress of Land Reforms in India* by G. L. Nanda in *Economic Review*, Vol. IX, No. 10 (Sept. 15, 1957) pp. 12-20.

The same suggestion has been repeated in the Second Plan. The legislation adopted in the States so far follows two different patterns. In some States comprehensive legislation has been adopted while in others only temporary action has so far been taken providing for stay of ejectment or regulation of rent. The States of Assam, J. and K., Bombay, Orissa, Madras (Malabar), U. P., Hyderabad, Rajasthan, Mysore (Malnad areas), Delhi, H. P. and Punjab have enacted legislations accordingly. But in Andhra, Kerala, Madras, Mysore, Orissa, Bihar the action taken so far is of a stop-gap nature providing for the stay of ejectment of tenants and regulation of rents.

The progress in the regulation of rents has been uneven, *e.g.*, in Rajasthan and Bombay the maximum rent has been fixed at one-sixth of the produce in Ajmer, Delhi and in certain cases in Assam, Hyderabad; at one-fifth in Orissa, H. P.; part of Mysore; and in certain cases in Assam, Hyderabad and V. P. at one-fourth; in Punjab, J. and K. parts of Mysore and in certain parts of Kutch at one-third; and in Bihar at 7/20th of the produce. At the other end are the rates of rent prevailing in Madras and W. Bengal. In Madras the rent is regulated in the districts of Tanjore and Malabar only. In Tanjore the rent amounts to 60% of the gross produce of the principal crops and in Malabar it is generally one-half of the net produce. In West Bengal a crop-sharer has to give 40% of the produce if he meets the cost of cultivation and 50% if the landlord meets the cost. In Andhra rents have not been regulated at all.

The following table gives the rent payable by the tenants to the landlords in the States :¹—

<i>State</i>	<i>Rent payable</i>
Assam	... One-fourth of produce.
Bihar	... The cash rent payable by a sub-tenant not to exceed the rent payable by his immediate landlord by more than 50 per cent, if the tenancy is held under a registered lease, in other cases 25 per cent. Produce rent is fixed at 7/20th of the gross produce.
Bombay	... One-sixth of produce in all areas except scheduled and backward areas where rent has been fixed at 3 to 5 times the assessment.

¹ Ministry of Information and Broadcasting, *Progress of Land Reform*, 1955, p. 17-18,

Madhya Pradesh	Not to exceed 5 times the land revenue in Berar. Limit still to be fixed in other areas.
Orissa	One-third to two-fifths of the produce. Cash rent same as in Bihar.
Madras (Malabar)	Half of the net produce or a fourth of gross produce in case of wet land and 3 times the annual assessment in case of dry land in Malabar.
(Madras)	Half of the net produce of paddy in case of wet land, and three times the annual assessment in case of dry land.
(Tanjore)	Three-fifths of produce of principal crops. Elsewhere rent is not regulated by law.
Punjab	One-third of produce.
Uttar Pradesh	Rent payable by sub-tenants is not to exceed twice the hereditary rent rate. Produce rent is not regulated
West Bengal	Crop-sharers using their own bullocks and implements give one-third of produce.
Hyderabad	Not more than a fourth in case of irrigated land and a fifth in case of other land.
Madhya Bharat	Twice the assessment (in case of sub-tenants).
Mysore	1/3rd of the gross produce in Maidan areas and 1/4th in the Malnad areas
Rajasthan	A sixth of produce.
Saurashtra	One and a half times the assessment.
Travancore-Cochin	Rent not regulated so far. In Cochin the rents payable by tenants-at-will cannot be enhanced or reduced. Bill for regulating rent before the Assembly.
Ajmer	A fifth of produce.
Bhopal	Rent payable by tenants not yet fixed.
Himachal Pradesh	A fourth of produce or value thereof.

Vindhya Pradesh	... Four times the land revenue in case of irrigated land, and two times for others.
Delhi	... Rent not to exceed a fifth of produce.

In a few States, provision exists to enable the tenants to commute the rent payable in kind to a fixed money rent. In H. P., the tenant has an option to pay in kind or in cash according to the rates notified by the Government.

(ii) Security of Tenure

In a large number of States, measures have been taken to ensure increased security of tenures to the tenants. These measures ensure : (i) the temporary protection to the tenants from eviction ; (ii) a minimum period of tenure ; (iii) fixity of tenure subject to eviction on prescribed grounds only, resumption of landlords being permitted up to a limited area in restricted cases.

In different States provisions for security of tenure have taken a variety of forms but broadly speaking States may be classified into the following categories¹ :—

(i) States where all tenants have been given full security of tenures without any right to landowners to resume land for personal cultivation as in U. P. and Delhi. In U. P. tenants, who were brought into direct relation with the State, were given permanent and heritable rights. The State recovers rent from them and pays compensation in the form of bonds to owners. In Delhi, tenants received full ownership rights and were required to pay compensation to owners in addition to the payment of land revenue to the Government.

(ii) States where the tenant has a limited security of tenure but is liable to ejectment in exercise of the landlord's right to resume a limited area for personal cultivation subject to the condition that a minimum area is left with the tenant. Bombay, Punjab, Rajasthan, Hyderabad and H. P. belong to this category.

In Bombay a land owner is permitted to resume half the land leased to a tenant subject to a maximum of three economic holdings, the size of economic holding varying from 4 acres (of irrigated land) and 16 acres (of other land). In the Punjab, resumption is limited generally to 30 "standard acres"² (for displaced persons it is 50 standard acres in Punjab and 40 standard acres in Pespu); and a tenant cannot be ejected from a minimum area of 5 'standard acres'

¹ *Second Five Year Plan*, pp. 184-185.

² A 'Standard Acre' is an acre of land of a given quality to which other classes of land can be related for purposes.

unless the State Government is able to allot alternative land from the pool of 'surplus' land obtained from the owners holding more than 30 'standard acres'. In Hyderabad, the tenant is generally entitled to retain a basic holding (3 family holdings varying from 18 to 216 acres according to the class of soil) except where an owner himself owns a basic holding or less. In Rajasthan generally the tenants are allowed to retain a prescribed minimum holding with a net income of Rs. 1,200 which each tenant is entitled to retain. In H. P., a land-owner may resume up to 5 acres and the tenant is entitled to retain three-fourth of his holding.

(iii) States where the landlord's right to resume is subject to an upper limit, but the tenant is not entitled to retain a minimum area for cultivation. Assam, M. P., Orissa, West Bengal and J. and K. belong to this category.

In J. and K., the limit of resumption is 2 acres of wet land or 4 acres of dry land in Kashmir province and 4 acres of wet or 6 acres of dry land in Jammu province. An owner whose holding does not exceed 4 acres of wet land or 6 acres of dry land in Kashmir Province and 6 acres of wet land or 8 acres of dry land in Jammu will be permitted freely to resume land up to the above limit of resumption. In West Bengal an owner who owns less than $7\frac{1}{2}$ acres is permitted to resume the entire land from a crop-share. An owner who owns land exceeding $7\frac{1}{2}$ acres is, however, entitled to resume only $\frac{2}{3}$ rd of the acre leased. No limit has been fixed on the extent of land which an owner may resume.

The limit of area which may be resumed, has been set at $33\frac{1}{3}$ acres in Assam ; 50 acres in Kutch and 7 to 14 acres in Orissa.

(iv) Other States where ejectment has been temporarily stayed or where action for protection of tenants has yet to be taken.

With minor variations, legislation has been passed in Bombay, H. P., PEPSU, Kutch and Saurashtra allowing the landlords to resume a limited area for personal cultivation. 'Personal cultivation' includes cultivation through servants or hired labourers. Such cultivation may have three elements : the risk of cultivation personal supervision and labour.

(iii) Grant of the right to tenants to purchase their holdings

The Second Plan has recommended that all the tenants of non-resumable area should be brought into direct relationship with State and each State should have a programme for converting tenants of non-resumable area into owners so that an end may be put to the vestiges of the landlord-tenant relationship.

The action adopted in the States for transfer of ownership to tenants after the suggestions of the First Plan, generally follows three different patterns, viz ;

(i) All tenants have been brought into direct relationship as in U. P. and Delhi, *e.g.*, in U. P. the State recovers rent from the tenants and pays compensation to the owners out of its increased revenue. In Delhi the tenants received full ownership rights and were required to pay compensation to the owners in addition to the payment of land revenue to the Government.

(ii) Tenants have been asked to buy ownership by a stipulated date, failing which they become liable to ejection. A provision along these lines has been included in the Bombay legislation.

(iii) The tenants that have been given an optional right of purchase on payment of a price regulated by law and payable in instalments spread over a period.

Provisions along these lines have been included in the Punjab, Rajasthan, Himachal Pradesh and the former States of Hyderabad, Madhya Bharat and Vindhya Pradesh.

In the Punjab, the right to purchase has been conferred only on those tenants who have held the land continuously for 12 years, the price is to be fixed at market value. In Hyderabad at 15 times the rent for dry land, 8 times the rent for wet irrigated land by wells and 6 times the rent for other wet lands. In PEPSU, at 90 times the land revenue or Rs. 200 per acre whichever is less. In H.P., Rajasthan, Bombay and Delhi also the tenants have been given the right to purchase ownership.

In the States of M. P., Madras and Mysore, the right of purchase has not been conferred on the tenants but the landlord's right of resumption has been restricted. In Jammu and Kashmir a ceiling has been imposed on the landowner's holdings at 22½ acres of land. Land in excess of this limit has been transferred to the actual tiller with the rights of an owner without compensation.

The ejected tenants are also entitled to restoration of land in the following States :—

(i) *Bombay*. If the landlord fails to cultivate the land personally within one year or ceases to do so within 12 years.

(ii) *Hyderabad*. If the landlord does not cultivate the land personally within one year or ceases to do so within 10 years.

(iii) *PEPSU*. If the landlord does not cultivate the land personally within one year or ceases to do so in the next 4 years.

(iv) *Himachal Pradesh*. If the landlord does not bring the land under his personal cultivation within one year.

Restoration of Ejected tenants. Due to several causes, there have been instances in some States of large-scale ejection of tenants. These ejections have generally taken the form of

what is known as 'Voluntary surrenders'. This has happened in Bombay, Hyderabad and several other States.

In Bihar the law provides for restoration of tenants dispossessed since February 1953 on application by the Collector.

In Madras a provision was made for restoration of tenants dispossessed since 1st December, 1953, on application.

The Second Plan has suggested two measures for the restoration of ejected tenants :—

(i) The ejectment and surrenders which have taken place during, say, the past three years, should be reviewed and restoration provided ; and

(ii) in order to discharge voluntary surrender of land under pressure in the future a provision may be made that surrender of land by a tenant will not be regarded as valid unless it is duly registered by the revenue authorities and even so, the landlord should be entitled to take possession of land only to the extent of his right of resumption.

Progress of Tenancy Reforms in India¹

(i) **Assam.** The Assam (Temporarily settled Districts) Tenancy Act was amended in 1953. It shortens the period for acquisition of the rights of a privileged raiyat or occupancy raiyat to 12 years and confers the right of transfer upon occupancy raiyats, protects an under-raiyat from ejectment, if he has held the land for five years and reduces rent.

The Assam Adhiar's Protection and Regulation Act was amended in 1952 to apply to both adhiars (share-croppers) who were in possession before the extension of the Act to a particular area and to adhiars admitted after the extension of the Act. This is applicable to permanently settled areas only.

By the abolition of intermediaries (under the relevant legislation) the rights of raiyats (tenants) and under-raiyats (sub-tenants) remain unaffected by this measure.

In temporarily settled areas, intermediaries have not yet been abolished. The main classes of tenants are raiyats and under-raiyats and acquire the rights of occupancy, generally, by 12 years' continuous possession. Under-raiyats get permanent and heritable rights only if ;

(1) In District Golpara, they have held the land continuously for 12 years.

1. The section is largely based on the Tabular Statements on Land Reforms in various issues of the *Economic Review* published by A. I. C. C., Delhi.

(2) In temporarily settled areas, they have held the land continuously for five years.

There is, besides these tenants, a class of share-croppers or adhiars. In the permanently settled areas they are not regarded as tenants and one liable to ejectment, if the landlord wishes to resume the land for personal cultivation.

There is no maximum limit on the extent of land which the landlord can resume.

(ii) **Bihar.** Various amendments have been made to existing laws from time to time. These broadly embody the following provisions .—

(1) If any settled ryot of the village cultivates any bakasht land of the landlord, he will immediately get occupancy status.

(2) In the settling bakasht lands, the landlord should give preference to persons residing in the village or the neighbouring villages ; the rent must not exceed 10% of the average village rate and the salami should not exceed ten times the rental.

(3) Occupancy tenant have been given full rights of excavating tanks and wells and of constructing buildings on their lands for their own use and also for religious and charitable purposes.

(4) Tenants have been given full rights over trees in their holdings for which they pay cash rent, including the trees which were previously recorded in the names of landlords.

(5) Tenants can send such rents by Postal money orders.

(6) It has been made incumbent on the landlord to furnish a full account of the rent payment to the ryots, failing which he will be liable for penalty.

(7) A share-cropper will get 11/20th of the produce of the land plus the straw and the landlord will get only 9/20th.

Apart from these the State Government passed the following other tenancy measures :—

(a) The Bihar Bakasht Disputes Settlement Act, 1947. The object of this Act is to settle by arbitration disputes over bakasht lands between landlords and ryots.

(b) The Ranchi Districts Aboriginal Ryots Agricultural Land Restoration Act, 1947. The tenancies of certain aboriginals in the District of Ranchi were sold during the freedom movement of Mahatma Gandhi because they failed to pay the rent during the movement. The object of this Act is to restore holdings to the ryots.

(c) The Bihar Privileged Persons Homestead Tenancy Act 1947. The object of this Act is to prevent forcible ejectment of Harijans, artisans and other poor persons from their homesteads.

(iii) **Bombay.** The Bombay and Agricultural Lands Act 1948, has been subject to a number of amendments during 1951, 1952 and 1953 and 1955, in order to confer greater rights upon the tenants.

A protected tenant (a tenant holding the land continuously for 6 years on given dates, or a tenant in possession of land at the commencement of the Act against whom a landlord has not obtained a declaration that he is not a protected tenant) has been given permanent and heritable rights subject to the landlord's right to resume on area up to 50 acres (including what he already holds under his cultivation) provided that : (1) such cultivation will be landlord's main source of income and (2) the landlord held the land on January 1, 1952. Unless the landlord holds less than 4 acres of irrigated or paddy land or 16 acres of other land (in which case he may resume the entire area) the protected tenant is to be left with half his holding.

A non-protected tenant has a term of 10 years, which is automatically renewable unless the land owner gives one year's notice (before the expiry of each 10 years' period) that he wishes to resume the land for personal cultivation. The landlord's right to resumption is governed by the same conditions which apply to the protected tenant.

A protected tenant is entitled to purchase ownership right generally at market value, payable in lump sum or in ten instalments spread over 15 years. This right is limited by two conditions : (1) The protected tenant cannot purchase more than 50 acres of land) including what he already holds an owner) ; (2) The landlord must be left with 50 acres of land. A non-protected tenant has, however, no right to purchase the ownership of his holding under the existing law.

Under the draft bill applicable to all tenants, a tenant is entitled to purchase an area which makes up an economic holding (4 to 16 acres). The maximum area a tenant may be given is 12 or 48 acres. Purchase price would be between 50 to 200 times the assessment, which may be paid in instalments not exceeding over a period of 12 years.

(iv) **Madhya Pradesh.** By the elimination of intermediaries, the tenants, known as absolute occupancy tenants and occupancy tenants have come into direct retation with the State and they can acquire ownership rights on paying 3 and 4 times the rent respectively as prescribed in the Abolition Act. Certain other tenants known as permanent tenants, ante-alienation tenants or

tenants of antiquity can acquire ownership rights on payment ranging from 1 to 6 times the assessment. Occupancy tenants under Malik Makbuzas (Plot proprietors) can acquire ownership rights on payment of 12 times the rent. Raiyats can acquire such rights on payment, in the merged territories of 2 times the rent and in the ryotwari villages of former C. P. on payment of 3 to 4 times the rent.

The rights of sub-tenants, however, remain generally unaffected. They acquire rights of occupancy only in land which is habitually sublet, *i.e.*, in land which is sublet for a period of 3 years in a consecutive period of 5 years.

In Berar where considerable areas are sublet, permanent rights were conferred on tenants and lessees with 10 years' possession by the Berar Alienated Villages Tenancy Law Amendment Act, 1950. The Berar Regulation of Agricultural Leases Act, 1951 conferred the status of protected tenants in an area not exceeding 50 acres upon all lessees holding land from a landholder who did not suffer from a disability. The protected tenant had a minimum term of 5 years renewable on application. The landholder could, however, eject a protected lessee in order to make up a minimum holding of 50 acres for his own personal cultivation. The Act was amended in 1953 to remove some defects.

Another legislation known as Madhya Pradesh Land Revenue Code, 1954 (II of 1955) was enacted, the more important provisions of which are—

(i) It has been decided to have two tenures, one having full transferable rights, *i.e.*, Bhumi-Swami, and the other having restricted rights of transfer, *i.e.*, Bhumidari. Bhumidari can, however, become Bhumi Swami on payment of a nominal premium to the Government.

(2) The Bhumi-Swamis have been given full rights over the trees in their holdings, the Bhumidars have identical rights except in certain trees specified as timber trees.

(3) The tenants holding land from Bhumidars and Bhumi-Swami will be treated as ordinary tenants. If the land is continuously sublet for 3 years in a consecutive period of 5 years the ordinary tenants will be entitled to acquire the rights of an occupancy tenant without payment of any premium. He can, therefore, acquire the rights of the tenure holders on payment of 10 times the rent to the Bhumi-Swami and 7 times of the rent to the Bhumidar.

(v) **Madras.** With the abolition of the intermediaries, the ryot who generally possessed permanent heritable and transferable

rights, came into direct relation with the State and would be liable to pay the Ryoti assessment for the land. The rights of tenants under ryots remain unaffected. The Madras Tenants and Ryots Protection Act, 1949, gives temporary protection to tenants of private lands in estates and also to ryots in Malabar. The tenants of ryots are not protected.

The landlord in Malabar can resume the land from the cultivating verum-Pattamdar (cultivating tenant) for personal cultivation in order to satisfy his primary needs. But the area which can thus be resumed has not been explicitly specified in the Act. The cultivating tenant can also be ejected for a number of other reasons, such as wilful denial of landlord's title, landlord needing land for personal residence, extension of a temple or a mosque, etc., Cultivating verum-Pattamdar in continuous possession for 6 years, cannot be ejected in the exercise of the landlord's right of resumption. Other tenants (customary verum-Pattamdars and Kanamdars who have 12 years' term which are renewable) have also been given security of tenure. In their case, the landlord case exercise his right of resumption only at the end of a 12 years period.

The tenants have generally no right to purchase ownership of their holdings. The tenants have been temporarily protected from ejectment for 5 years up to 1st May, 1957 in Tanjore District, and up to 1st May, 1958 in some parts of South Arcot District. At the end of the period, they will be liable to ejectment on one year's notice. If the notice is not given, the term will be extended for another five years. The South Kanara Cultivating Tenants Protection Act, 1954, gives cultivating tenants temporary protection from ejectment.

Tenancies in Ryotwari area and subtenancies in Zamindari areas are not regulated except in Malabar, Tanjore and South Kanara Tenants of Minor Inams remain tenants at will.

The Madras Cultivating Tenants' Protection Act, 1956 provides for the settlement of agrarian disputes, and enables agricultural operations to proceed unhampered and provides for the stay of ejectment of tenants. It was amended in October, 1956 to enable owners with $12\frac{1}{2}$ acres of wet less or less to resume for personal cultivation half the area leased subject to a maximum of 5 years.

(iv) **Orissa.** By various amending Acts and other legislative measures in the course of the last few years the tenancy system was regulated giving following salient features of reforms :

(1) Occupancy right was conferred on non-occupancy ryots, under ryots, service tenure holders, etc., in respect of their homestead lands in 1946.

(2) Occupancy rights were conferred on tenants in whole inam villages.

(3) By the Madras States Land (Orissa Amendment) Act, 1947, Government were empowered to fix fair and equitable rent in the proprietary estates of South Orissa where rents were abnormally high.

(4) Occupancy rights on Chandnadar were conferred in respect of their homesteads in 1947.

(5) By an enactment in 1948 landlords were prevented from alienating certain classes of land on the eve of abolition of a Zamindari without the previous permission of the collector.

(6) The Orissa Tenants Protection Act, 1948, gave temporary protection to under tenants and fixed the rate of produce rent payable by them.

(7) Measures for the reservation of adequate communal lands in a village for division of hay and subsidiary crops between under-tenants and landlords were also passed.

(8) The Orissa Merged States (Lands) Act, 1950 confers rights of the free transfer, full rights over trees and certain other tenancy rights on occupancy tenants in merged States.

(9) The Orissa Tenancy (Amendment) Act, 1950, gives option to the service Jagirholders to cease rendering personal service and to apply to the collector for fixation of fair and equitable rent in respect of their Jagir lands.

Land in the possession of a temporary lessee (who holds it from an intermediary owning 33 acres or more) shall be retained by the lessee under the provisions of the Orissa Estates Abolition Act.

Orissa Tenants Relief Act, 1955, provides for the resumption of an area not exceeding 7 standard acres (14 unirrigated acres). It is hoped that the Act will be amended to provide for a minimum holding of 5 standard acres for each tenant.

(vii) **Punjab.** The occupancy tenants and adna maliks were made owners of their land on payment of compensation (recoverable as arrears of land revenue) by the enactment of Punjab Occupancy Act, 1951, and Abolition of Ala Malikiyat and Talukdari Act, 1951.

The Tenants Security of Tenure Act, 1953, has consolidated and amended suitably the laws relating to the tenancy. Its main provisions are :—

(1) The maximum permissible area which a landholder can reserve for self-cultivation is 30 standard acres or 60 ordinary acres, whichever is less (for displaced persons the limit is 50 standard acres or 100 ordinary acres).

(2) No tenant could be evicted before April 30, 1954, after which he is liable to ejectment if he does not fulfil certain conditions, e.g., failure to pay rent regularly without sufficient cause, etc.

(3) The landlord is required to reserve the area, which he wishes to resume, within 6 months. There is no time limit for resumption of this reserved area; nor is it obligatory to cultivate personally the area so resumed.

(4) Tenants of non-resumable area get fixity of tenure for a period of 10 years.

(5) A tenant who has been ejected on grounds other than those mentioned in (2) above before the commencement of this Act but after August 15, 1947, shall be entitled to be restored on application to the Assistant Collector of 1st Grade of the area within 60 days of the commencement of this Act.

It was decided by the Central Committee for Land Reforms that the ejectment on grounds of landlord's right of resumption should be made subject to two conditions, namely: (i) resumption will be permitted on grounds of personal cultivation only, (ii) a tenant shall not be ejected from a minimum area of unless he is allotted alternative land.

Provisions to this effect are being incorporated in the Amended Bill.

Also under the Amendment Bill, tenants of non-evacuee land with 6 years continuous possession have a right to purchase their holding on the condition that owner should be left with 30 standard acres or 60 ordinary acres, but in Kangra and Hoshiarpur districts the owner is to be left with 10 standard acres and purchase price will be $\frac{3}{4}$ of the average market value on the date of purchase. Payments will be made in 6 monthly instalments not exceeding ten.

(viii) *Rajasthan*. Rajasthan consists of:—

(1) *Khalsa area* (about 50,000 square miles), most of which is held under ryotwari system, there being no intermediaries between the State and the tenants.

(2) *Jagir area* (about 77,000 square miles).

In respect of tenancy, a comprehensive Act has recently been passed. According to this Act, the general body of tenants will have permanent, heritable and transferable rights. In lands commanded by irrigation projects the tenants will, however, have to make payments to acquire such rights.

The sub-tenants and tenants of khudkasht are generally entitled to retain a minimum holding with a net annual income of Rs. 1,200, where, however, any land was under the personal cultivation of the landlord continuously for five years prior to 1948-49, the landlord has the right to eject the tenants of such lands up to 30 acres of irrigated or 90 acres of unirrigated lands.

The tenants and sub-tenants have the right to purchase the minimum area on payment of a price as follows in annual instalments not exceeding six :—

(1) The unirrigated lands—10 times the annual rent.

(2) Well irrigated lands—15 times the annual rent.

Provided the price does not exceed where a tenant held the land for a period of—

6 years	50% of the market value		
6-12 years	35%	„	„
above 12 years	25%	„	„

(3) Other irrigated lands as provided.

(ix) **U. P.** The U. P. Zamindari Abolition and Land Reforms Act, 1951, does away with the bewildering variety of various classes of tenants. Under this Act, there will only be two main classes of tenure holders—the Bhumidars and Sirdars, and two minor classes—Aseamis and Adhivaris. U. P. Land Reforms (Amendment) Act 1954, confers Sirdari rights on all the 44 lakh adhivaris without any payment of compensation by them. All tenants and sub-tenants are entitled to acquire permanent heritable and transferable rights except subtenants holding from tenants who suffer from a disability ; subtenants of grove land and tenants of land in which permanent rights cannot be given such as lands in the bed of rivers or lands of shifting and unstable cultivation.

Tenants who did not already possess the right of transfer were entitled to acquire the right and reduction of rent by half on payment of 10 times the rent. About 20 per cent of such tenants have made necessary payments amounting to about Rs. 33 crores.

All the existing zamindars will be given Bhumidari rights in respect of their sir, khudkasht and groves. All tenants of sir, the sirdars will have the right to become Bhumidars by paying 10 times their rent. A Bhumidar will have a permanent, heritable and transferable right in his holding and the right to use his land for any purpose whatsoever. He shall not be liable to ejectment.

All the existing tenants who have a right of occupancy at present will have Sirdari rights under the Act. Sirdars will have permanent and heritable rights but will not use their holding for

any other purpose than agriculture, horticulture and animal husbandry. Asami rights will accrue to tenants and sub-tenants of grove land, non-occupancy tenants of pasture lands, of lands covered by water or in the bed of a river, etc. Where Bhumidars Sirdars suffer from a disability, they can lease out their lands and such lessees shall also be asamis.

Details also have been laid down in the Act for the devolution of land to successors to prevent excessive sub-division of holdings. Sub-division will only be permitted if the parts so sub-divided are not less than an economic holding ($6\frac{1}{2}$ acres for U. P.)

(ix) **West Bengal.** On abolition of intermediaries there are three classes of tenures, namely, (1) Raiyats, (2) Under-Raiyats, (3) Bargadars or share croppers (who are not classed as tenants).

Rights of occupancy are passed by majority of raiyats. There is a small class of non-occupancy raiyats who were tenants-at-will but on abolition of intermediaries have come in direct contact with the State.

The under-raiyats (tenants holding from raiyats) acquire permanent and heritable rights by (i) local custom (ii) admission by landlord of such rights, or (iii) by continuous possession for 12 years. The under-raiyats who have not acquired occupancy rights can be ejected if the landlord satisfies the court that he requires the land for his personal cultivation. Under the Estates Acquisition Act, 1953, the Government have powers to bring all under-raiyats into direct relation with the State. West Bengal Estates Acquisition Act provides for the khas lands of the raiyats, etc., which they do not cultivate or which are cultivated by bargadars. The raiyats can retain up to 33 acres of khas land. The lands thus vesting in the Government will be settled with the bargadars to the extent of an economic holding (5 acres).

The bargadars on lands below the limit of 33 acres (and they are a vast majority) remain liable to ejectment on grounds of personal cultivation. A Land Reforms Bill which would supplement the Bengal Estates Acquisition Act Bill provides for among other things the rights, obligations and incidents in respect of holding of raiyats, limitation on transfer and sub-letting and control and regulation of the share produce system of cultivation. There is no provision for restoration of an ejected bargadar if the landlord fails to bring the land under personal cultivation.

The West Bengal Bargadars (Amendment) Act, 1954, and the West Bengal Alienation of Land (Temporary Provisions) Act, 1954, were enacted to restore to the bargadar the land from which he had been ejected by the landowners in expectation of the impend-

ing abolition, and for the relief of the petty cultivators who had to part with their land during the period of distress from January 1951 to November 30, 1953.

The Central Committee has reviewed the situation recently and has advised that : (1) the limit of resumption should be 3 economic holdings *i.e.*, 15 acres, (2) each bargadar if the landlord fails to bring the land under personal cultivation within one year or ceases to cultivate it within a period of 5 years, (3) in respect of non-resumable area, the bargadar should have fixity of tenure and the right to purchase the land on payment of a moderate price fixed in terms of multiples of rent or land revenue and payable in instalments spread over a period.

3. Fixation of Ceilings on Holdings

One of the problems of Indian agriculture is the small size of holdings and their fragmentation. The Planning Commission, therefore, recommended that the States should work and fixed a maximum and minimum limit of land holdings. This relates to the future acquisition of land as also the absolute amount of land which any individual may hold. Before 1951, only U. P. had enacted a legislation limiting the acquisition of land to 30 acres, and since then similar measures have been adopted in many other States too. The following table gives the limit of ceilings of land on existing holdings in different States¹ :—

J. and K.	... A ceiling of 22 $\frac{3}{4}$ acres with the provisions that in excess of this will be transferred to the ownership of cultivating tenants without compensation.
West Bengal	Limit of 33 acres with provision for State acquisition of rent-receiving interests about this limit.
Punjab	30 Standard acres (upto 60 ordinary acres) and in the case of displaced persons 50 acres (upto 100 ordinary acres).
Hyderabad	3 to 4 $\frac{1}{2}$ times the family holding (family holding defined as yielding a net annual income of Rs. 800).
Bihar	A maximum of 30 acres of wet land for a family of 5 members, with the provision for an additional 5 acres for every additional member.

¹ *India*, 1957 p. 259 ; and *Economic Review*, Vol. No. 10, p. 46.

H P.	..	30 acres of land in the district of Chauda and lands assessed for Rs. 125 or more in the rest of the State.
Saurashtra	...	3 Economic holdings.
Delhi	...	30 Standard acres.
Assam	...	50 Acres

Ceilings of future acquisition of land have been imposed in Bengal at 25 acres, Hyderabad, 3 family holdings (*i.e.*, 12 to 180 acres); in U. P., 30 standard acres; M. B., 50 acres, Saurashtra, 3 economic holdings (60 to 120 acres); Delhi, 30 standard acres and in Bombay, 12 to 48 acres depending on the class of land. J. and K., 22½ acres; Punjab 30 std. acres (in case of displaced persons 40 std. acres)

The Planning Commission has recommended that the following types of farms should be exempted from the ceiling :—

- (i) Tea, coffee and rubber plantations;
- (ii) Orchards where they constitute reasonably compact areas;
- (iii) Specialised farms engaged in cattle breeding, dairying, wool raising, etc.;
- (iv) Sugarcane farms operated by the sugar factories; and
- (v) Efficiently managed farms which consist of compact blocks.

Regulations of Standards of Cultivation

Hyderabad was the first State to prescribe standards of cultivation and land management and for the resumption of land in case of failure of the landlord to conform to the prescribed standards, under Tenancy and Agricultural Lands Act of 1950 (as amended in 1954). This Act also provides for the resumption of management of holdings equal to or more than 3 family holdings if the cultivation falls below the prescribed standards. In H. P., under the Land Reforms Act, the land holdings of 30 or more acres may be resumed for improvement purpose in Chamba District and in other area where the assessed land revenue is Rs. 125 or more, the management of land is liable to be assumed by the State if the prescribed standards of cultivation are not maintained. In Orissa, under the Agricultural Lands Act of 1951, the observance of the minimum standards of cultivation regardless of the size of holdings, has been provided.

4. Reorganisation of Agriculture

(i) *Consolidation of Holdings.* The movement towards the consolidation of holdings is partly voluntary and partly compulsory. Legislation towards this end has been enacted in Bombay, M. P., Punjab, U. P., Jammu and Kashmir, and H. P., West Bengal, Bihar Orissa and Rajasthan. The methods adopted in the States vary in details. In M. P. and J. and K., the legislation permits the Government to exercise partial compulsion on a minority of landholders when a specified number of persons in an area expresses a desire for consolidation. In districts of Muzaffarnagar and Sultanpur of U. P. a scheme of compulsory consolidation of scattered holdings has been put into operation. Planning Commission recommended that the consolidation of holdings should be taken in National Extension and Community Project areas as a task of primary importance to agricultural programme.

Special provisions for consolidation of holdings have also been incorporated in the Tenancy Acts of Orissa, Hyderabad, etc. Consolidation work has so far been undertaken in Bombay, M. P., Punjab, Pepsu, and Delhi. During the First Plan period,, in Punjab 48 lakh acres of land had been consolidated, in M. P., 29 lakh acres and in Pepsu 13 lakh acres. In Bombay and Delhi 1860 and 210 village respectively had been consolidated. In U. P. consolidation is in progress in 21 districts and about 44 lakh acres have been consolidated. The State Plans include a provision for Rs. 382 lakh for the purpose. The total target is over 380 lakh acres.

Consolidation through co-operative societies has been carried out in Punjab, J. and K., Delhi and Madras.

(ii) *Prevention of Further Fragmentation.* Measures to check subdivision and fragmentation of holdings, relate to putting restriction on partition and transfer below specified limits. Provisions for prevention of fragmentation have been enacted in 15 States. With some variations in detail, the law generally provides that no holding shall be transferred or partitioned in such a way as to leave a plot of land or a holding of a size which it is unprofitable or uneconomic to cultivate. In some States the provisions relate only to the total holding of a cultivator while in others they also regulate the size of each plot in a holding. The U. P. Government has fixed a minimum of 6½ acres as the limit ; Hyderabad from 2 to 24 acres ; Delhi 8 standard acres ; M. B. and Bhopal 15 acres, V. P. has prescribed as the minimum limit 5 acres of irrigated land and 10 acres of dry land.

(iii) *Census of Land Holdings.* The census of land holding and cultivation has been carried out in 22 States, according to the recommendations of the Planning Commission. In 10 States it

has been based on complete enumeration of all holdings (Andhra, Bombay, M. P., Madras, Hyderabad, M. B. Saurashtra, Ajmer, Bhopal and Kutch); in 7 States it has been based on complete enumeration but was restricted to holdings of 10 acres and above (in Punjab, Pepsu, Mysore, Coorg, Delhi, H. P. and U. P.). In U. P., sample survey has been adopted. Sample surveys have also been undertaken in Bihar, Orissa, Rajasthan, Travancore-Cochin etc. In Assam and West Bengal, data have also been collected regarding land holdings. The data collected relate to size and distribution of (a) holdings classified according to area owned, and (b) holdings classified according to area under personal cultivation.

(iv) Co-operative Farming

Co-operative farming has not made much headway in India. There are at present 1,247 co-operative farms working in India ; with 342 in Bombay ; 180 in Punjab ; 163 in U. P. ; 90 in Assam ; 76 in Rajasthan ; 75 in West Bengal ; 58 in PEPSU, 56 in M. B. ; 34 in V. P. and 173 in other States.¹ There are at present about a 1,400 co-operative farming societies which include tenant farming societies, joint farming societies, farming societies. They cover an area of about 1,94,000 acres. The Second Plan provides that steps should be taken to provide sound foundations for the development of co-operative farming so that during period of ten years a substantial portion of agricultural lands are cultivated on co-operative lines functioning in different parts of the country.

5. Development of Co-operative Land Management

The ultimate solution of the land problem, as envisaged in the First Plan is co-operative village management. The co-operative village management assumes that the ownership of land belongs to the peasants. The essentials of this type of management are² :

- (i) All the land of the village is treated as one single farm.
- (ii) Cultivation of the entire village is organised to secure the maximum advantage of the village community.
- (iii) Village resources are well organised and maximum employment is provided to owners of land. Workers, who are non-owners of land, receive remuneration for their work, while owners receive an additional return for their rights of ownership of land.
- (iv) The village management body allots the constituted blocks for cultivation purposes.

1 Sri A. P. Jain's disclosure in Lok Sabha on 30th August 1956.

2 *First Five Year Plan*, 1951, pp. 102-103.

(v) This system is usually adopted when at least $\frac{2}{3}$ of the owners of land or permanent tenants holding not less than $\frac{1}{3}$ of the cultivated area of the village want it.

According to the Planning Commission, during the transition of co-operative village management, lands in the village will be managed in three ways : *Firstly*, there will be the individual farmers cultivating their own holdings ; *Secondly*, there will be groups of farmers who pool their lands voluntarily in their own interest into co-operative working units. *Thirdly*, there will be some land belonging to the village community as a whole-consisting of common lands, the village site, the cultural wasteland assigned to the village, and lands available for settlement of landless.

The main agencies for achieving co-operative village management are :—

(i) The National Extension Service and programmes for increasing agricultural production and developing other allied activities ;

(ii) the village panchayats ;

(iii) steps taken to develop co-operative credit, marketing, warehousing, processing, etc. ;

(iv) programmes for the development of village industries ;

(v) programmes for assisting voluntary co-operative farming societies.

Problems of Enforcement of Land Reforms

In several states, land reform measures have been enacted slowly and without adequate arrangements for administration. In a large number of States, tenancy reform laws have had to be continuously amended from time to time as they were found either ineffective or unsatisfactory. In several States, where the landlords have been given the right to resume land, safeguards necessary to ensure that tenants shall, as far as possible, not be rendered landless have not yet been provided. Such safeguards as exist have been rendered largely ineffective in some of the states by the failure to reduce rent to a reasonable level.

The Tenancy Reforms Committee appointed by the Land Reforms Panel drew attention to the fact that in many States, the legislation has failed to give the intended relief due to the following causes :—

(i) Gaps in the law ;

(ii) In an attempt to balance meticulously the interests of owners and tenants the provisions of the law in a number of States have become so complex that the bulk of the peasantry find it difficult to understand them ;

(iii) No organised effort was made to make the tenants understand the law and to ensure that they take advantage of it ;

(iv) Even where the tenants are aware of their rights they are generally in too weak a position—both economically and socially—to insist on their rights ;

(v) The lack of a strong administrative machinery within easy reach of tenants. In some States there are no village records from which a tenant can establish his possession. Even where his name is entered the landlord has so much influence in the village that frequently it is very difficult for the tenant to establish his right ;

(vi) In some cases the attitude of the Revenue Officers may at times be unconsciously against the tenants.

Second Plan's Observation regarding Administrative Difficulties in the Enforcement of Land Reform Measures

The Second Plan has drawn attention to the administrative difficulties in the enforcement of land reform measures, and has pointed out that there had been instances in some States of large ejectment of tenants and of so-called voluntary surrenders of tenancies. The plan emphasises the following points :—

(i) The maintenance of correct and upto-date land records is a pre-requisite for implementation of the land reforms. Frequently revenue records are defective, inasmuch as they do not provide information in respect of the holdings of the tenants and crop-sharers, as in Andhra, Assam, Manipur, Mysore, Travancore-Cochin and Coorg. Much leeway has to be made up in Bihar and Orissa for the preparation of upto-date records.

(ii) In areas where cadastral surveys have not been carried out, it is necessary to prepare up-to-date revenue records on the basis of what may doubtless be rough map.

(iii) With regard to entries of cultivating possession of tenants and co-sharers at the time of field inspection by the Revenue Officers, the Plan suggested that some members of the Village Panchayat should be associated. Copies of records which are prepared should be made available for inspection in the Panchayat office and copies of changes, which are proposed, should be supplied to the parties concerned.

(iv) As much of the new legislation is complex in character, it is necessary that the revenue staff itself should understand thoroughly its objectives and the means through which they are to be attained. Arrangements must, therefore, be made, for the thorough education of the staff in every important land reforms measure as soon as it is enacted.

(v) An active and informed public opinion can be a great assistance in implementing land reform programmes. Steps should therefore be taken to make widely known the rights and obligations of different sections of the rural community in terms of land reform legislation. It should be the duty of the revenue staff, after they have themselves grasped the provisions of the law and its objectives to hold meetings of the cultivators explaining fully the rights given to the various sections.

CHAPTER 28

LAND REFORMS (Contd.)

Bhoodan Movement

The Bhoodan Movement

The *Bhoodan* (or voluntary land gift movement) was conceived by Acharya Vinoba Bhave early in 1951, when he happened to be touring the Telanagana district of Hyderabad State. There was agrarian unrest in the district caused by land hunger on the part of the cultivators. In appealing to the landlords for gifts of land he has been applying the Gandhian principles of peaceful persuasion (*satyagraha*).

Aims and Philosophy of the Movement

Describing the aims of the movement, Acharya Vinoba says, "In a just and equitable order of society land must belong to all. Like air and water, land belongs to no individual but to God. That is why we do not beg for gifts but demand a share to which the poor are rightly entitled." "Land is not given to the landless people as charity but as a matter of right. They are also awakened and made conscious of their rights and responsibilities. They too are to participate in the creation of a new social order, and to co-operate in making their village and offer their *Shramdan*, for the purpose . . . Unless the poor accept this new ethic and act upon it, the new social *Dharma* will not become universal and irresistible. Later, when the revolutionary process has been completed or advanced, it is the poor who will be the beneficiaries."

The main objective of this movement is "to propagate the right thought by which social and economic maladjustments can be corrected without serious conflicts."

Progress of the Movement

From the small beginnings in 1951, when Shri Vinoba started his mission of collecting land for the landless in *Pochampalli* village, the movement now has been extended over the length and breadth of India. On the basis that one acre of land is necessary for one landless individual, he fixed up the quota for the collection of 5 crores of acres to be completed by April 1957. The donations during the years 1951, 1952, 1953 amounted to 60,000 acres; 4,03,000 acres, and 19,87,000 acres. Up to October 1956, in all 42,04,343 acres of land were collected from 5,77,524 donors. The land distributed amounted to 4,94,350 acres and 1,65,994 families were benefited thereby.

Many States have enacted legislation for facilitating transfer and redistribution of Bhoodan lands. Some financial assistance has also been given by the State Governments. The Govt. of India have sanctioned a sum of Rs. 2.5 lakhs for co-operative settlement on Bhoodan lands in Bihar.

The following table gives the progress of the Bhoodan movement in different States, upto date :—

Progress of the Bhoodan Movement in India (upto 1956).

Area	Land collection (acres.)	No. of donors	Land distribution (acres)	No. of families benefitted
Assam	5,000	...	42	...
Andhra	69,593	6,857	684	372
Uttar Pradesh	5,86,009	26,182	67,305 ^(a)	38,326
Utkal	3,13,305	99,353	94,196	17,515
Karnatak	4,424	1,038	699	245
Kerala	29,021	4,637	2,126	1,274
Gujarat	47,486	11,309	11,527	3,529
Tamilnad	67,883	20,995	4,584	1,749
Delhi	396	175	157	95
Nag-Vidarbha	24,311	—	29,484	3416
Punjab-Pepsu	16,133	3,914	1,383	337
Bengal	12,192	7,959	2,812	2353
Bombay	674	...	nil	nil
Bihar	21,54,189	2,96,402	1,55,405	27,227
Mahakoshal	90,519	35,196	21,835	5,354
Madhya-Bharat	61,946	9,090	3,094	917
Maharashtra	41,103	6,615	5,174	1210
Mysore	9,648	3,694	400	73
Rajasthan	3,93,347	7,073	26,834	45,11
Vindhya Pradesh	10,867	2,486	1,992	541
Saurashtra	31,237	9,330	8,185	1,107
Himachal Pradesh	1,568	121	21	8
Hyderabad	1,79,492	10972	74,111	10,835
Total	42,04,343	5,77,524	4,94,350	1,65,994

(a) In U. P. 47,007 acres of land have been Settled as village common land.

It will be observed from this table that Bihar, U. P., Rajasthan, Utkal and Hyderabad had the largest collections amounting 21,54,000 acres ; 5,86,000 acres ; 3,93,000 acres ; 3,13,300 acres and 7,79,500 acres respectively.

Forms of Bhoodan

With the passage of time, the movement has put forward new forms and new classifications of the movement. The main classifications affecting the mode of redistribution are the following :

Firstly, big cultivators are expected to donate a part of the land at present cultivated by them. Such a land is given directly to the landless labourers who often happen to be the employees of the big cultivators.

Secondly, people are also expected to donate land which is not at present being cultivated but which is in the nature of cultivable waste. Such land will have to be reclaimed.

Thirdly, even the land which really belongs to somebody else but is cultivated by a tenant may be donated. Such donations take two forms—there may be bigger tenants who may be asked to donate a part of the land under their cultivation. Even smaller tenants can donate land. This is considered donation by way of goodwill. Such land is usually returned back to the tenant donating it. The zamindars are often asked to donate the compensation money received from the Government.

Fourthly, land may also be donated by very small landowners. This is simply a token of love.

Associated with *Bhoodan*, Vinobaji has also launched the *Sampatti-dan* (donation of property), *Koosp-dan* (donation of well), *Hal-dan* (donation of the plough), *Garihdan* (donation of the house), *Budhi-dan* (donation of one's wisdom), *Bail-dan* (donation of oxen), *Shram-dan* (service duration), and *Prem-dan* (goodwill donation), and lastly it has grown into the '*Poorna yajna*' or complete sacrifice.

The following table gives the progress of *Sampatti-dan*, *Gram-dan*, *Jeevan-dan*, etc. :—

Progress of Sampati-dan, Gram-dan, etc

Area	Sampati-dan in rupees	No. of donors	No. of gram-dan	No. of Jeevan- danis
Assam	2,500	—	12	—
Andhra	2,04,341	1,540	56	8
U. P.	56,786	2,099	9	190
Utkal	41,658	4,417	1,302	56
Karnatak	2,571	162	1	10
Kerala	7,506	506	nil	147
Gujarat	9,092	61	1	29
Tamilnad	3,18,984	22,665	10	37
Delhi	14,899	38	nil	—
Nag-Vidarbha	—	6,500	nil	170
Punjab-Pepsu	83,888	1,442	nil	19
Bengal	38,479	1,737	7	45
Bombay	10,194	—	nil	—
Bihar	1,62,099	33,144	62	1,317
Mahakoshal	18,831	700	nil	—
Madhya Bharat	27,595	1,279	10	44
Maharashtra	23,000	311	6	50
Mysore	13,336	173	nil	—
Rajasthan	77,985	3,629	7	52
Vindhya Pradesh	6,823	—	nil	—
Saurashtra	—	—	nil	5
Himachal Pradesh	1,050	—	nil	—
Hyderabad	25,545	544	4	15
Total	12,76,957	80,947	1,487	2,194

More recently, the emphasis has been as Gramdan rather than Bhoodan. About 2,500 villages have been donated in Gramdan out of which Bihar accounts for 1,800 villages and Bombay and Madras for another 200 village each.

Distribution of Land

When a land gift is made, gift-deeds are prepared in duplicate, duly signed and attested by the witnesses which are collected by the *Pradesh Bhoodan Samitis* and forwarded to the *Sarwa Seva Sangh*, Sevagram for Shri Vinobaji's signatures before the distribution of land. These Samitis form district or local committees for the purpose of collecting land-gifts. The general method of redistribution of land has been explicitly prescribed and is as follows :—

1. The date for the distribution of land is fixed several days in advance and is announced seven days before the actual date of distribution by the beat of the drum. The announcement is repeated a day before the date of distribution and provision is made that each individual family in the village should be informed.

2. During the intervening week, the distribution workers inspect the land donated, study its fertility and decide the acreage necessary for the maintenance of a peasant family with the help of the *Surpanch* and the village *Lekhpal*.

3. The information regarding the place and date of distribution is sent to the District Magistrate and other officials concerned to get the benefit of their help.

4. On the appointed date at the fixed place and time, in the entire village gathering, the distribution of it is made at a public meeting at which the *Tehsildar*, *Lekhpal* and the *Kanungo* are present along with the members of the village Panchayats and the general public. The landless are asked to stand.

5. The first preference in the distribution of lands is given to the landless agricultural labourers, followed by those with very insufficient lands and with no other occupations, with other categories coming next, if the land is left over.

6. The maximum amount of land given to one family of five members should not be more than one 1 acre if it is irrigated and between $2\frac{1}{2}$ and 5 acres if it is dry. If possible, at least one-third of the collected land in each village is given to the *Harijans*.

7. Normally the land collected in one village is made available to residents of that village alone. Any surplus is given to the people of the neighbouring village as well.

8. When the lands for distribution are insufficient, the task of picking out of the most deserving persons is placed on the landless themselves. Failing this, lots are drawn and land is allotted accordingly.

9. The donees are asked to sign a printed application requesting for land, after which they are presented with the certificates of having received the land.

10. No fees are charged from the recipients of the land but they are liable to pay rent on the acquired land immediately if the land is cultivable.

11. The land received is to be cultivated by the recipient himself for at least 10 years and the cultivation should start within 3 years of the receipt of the land.

12. If the recipient fails to cultivate the assigned land continuously for 2 years, the Government has the right to allocate land to some other landless person.

13. As far as possible, efforts are made to consolidate the pieces of land prior to distribution. Every possible care is taken to see that production of land does not suffer due to its distribution.

Benefits claimed for the Movement

The following advantages have been claimed for this bloodless revolution :—

1. It will solve the problem of 6 crores of landless labourers by allotting them necessary grants of land.

2. It will reduce and ultimately remove inequalities of income distribution by bringing about a more equitable distribution of land and other forms of private property.

3. It will fully utilize all heretofore unutilised and uncultivated land and will increase the agricultural productivity.

4. It is an alternative and aid to the abolition of intermediaries.

5. It paves the way for extensive land reforms.

Calling *Bhoodan* "a striking example of the advantages of private enterprise," the *London Economist* says, "Mr. Bhave has done more than all the State Governments to get land for the landless, and he is doing it without red-tape In terms of production the effects of *Bhoodan* are not as unfortunate as one might fear, because the agricultural extension in schemes and the Community Protects will bring skill, seeds and credit to the villages and a man's willingness to learn and toil is naturally greater if he has land of his own."

In the words of Prof. S. N. Agarwal, "This veritable revolution in the social and moral values of life, apart from solving the problem of land redistribution among the landless peasantry . . . seeks to bring about a radical and revolutionary change in the psychology of Indian Society by creating atmosphere of equality, goodwill and co-operative efforts."

Defects of the Movement

Unfortunately the Movement suffers from the following defects too :—

1. Most of the donated land is either waste land or land

which is lying idle. If such a land is given to a landless family it is not likely to add to his economic prosperity.

2. The amount of land collected so far is insignificantly small as against the budgeted quota. It is doubtful whether the quota can be collected.

3. The distribution system is also very defective. Even years after collection, donated land lies idle, which means loss of agricultural to the nation.

4. The movement makes no provision for the supply of tools and implements and the required amount of capital to the donees of land.

5. No criteria has been laid down to judge as to who is really deserving enough to be the donee of the land.

What should be our Future Land Pattern ?

Any change in land policy can be justified only in so far as its objective is to secure a better utilisation of land resources. The Agrarian Reforms Committee has suggested that the future pattern of Indian agrarian economy must satisfy the following principles :

(i) The agrarian economy should provide opportunity for the development of individual's personality,

(ii) there should be no exploitation,

(iii) there should be maximum efficiency of production, and

(iv) the scheme of agrarian reforms should be practicable.

Unless the future agrarian economy satisfies all the principles laid down, it may yet be uneconomic or exploitative or unpracticable.

One important question that arises prominently in this connection is what system of land tenure should be introduced in the place of *zamindari*. Broadly speaking there are five main systems that require consideration in this connection, *viz*, (i) state farming, (ii) capitalist farming, (iii) introduction of collective farming, (iv) peasant proprietorship, and (v) co-operative farming.

Let us examine each of these alternatives and see which of them will suit us more.

(i) State Farming

Under this system the land is first nationalised and then managed by the Government officers and the cultivators merely become

wage labourers. Such a system was first adopted in U. S. S. R. on a large scale after the Revolution. In 1939, there were 477 State farms (kolkhozes) but the record shows that in spite of rigid control of the State over the entire economy, the State farms have been comparatively a failure, and hence U. S. S. R. has to convert these farms into collective farms—'Kolkhozes'. Even Stalin in 1934 admitted while addressing the Central Committee of the Party, "Only a few State farms paid their way through. I do not in the least underestimate the great revolutionising role of the State farms. But if we compare the enormous sums the State has invested in the State farms with the actual result they have achieved to date, we will find an enormous balance against the State farms."

To use this method of land utilisation in our country, all land would have to be nationalised and managed by bureaucrats. This would weaken the incentive for efficient production both in the managers and the agricultural workers leading to low output and higher cost of production besides leading to centralisation of powers in the hands of the few and exploitation of the agriculturists. Therefore, State farming as a general method of land utilisation in our country cannot be recommended. The state farming should be carried on only for the purposes of conducting experiments and research, growing improved seeds, demonstration to cultivators of the improved methods of farming or as stations for supplying costly implements on lease or hire. It is interesting to note in this connection what the Rural Reconstruction Committee of Australia observes about State farms in that country, "Here the State farms are not intended primarily as production units of the ordinary type but they are more concerned with the experimental and demonstrational work associated with research and adoption of new methods. In other countries too the experience has generally been the same, *i.e.*, farms which perform a specific service for an industry are often successful (mainly the Danish farm which rear heifer calves for dairy farmers); those with the sole objective of maintaining supplies are seldom unqualified successes." Therefore, in India such farms should be run for experimental and demonstrational work. But judging the work that has been done by such State farms, which is very insignificant, the Agrarian Reforms Committee suggests that instead of increasing the number of such farms, demonstrations of improved methods of cultivation and technique should be conducted as far as possible on the plots of the agriculturists themselves. However, State farming will be necessary when wastelands are reclaimed and the agricultural labourers are settled thereon.

(ii) Capitalist Farming

It is also known as the 'Estate Farming'. It is very common system in America and Great Britain. In India, too, there are few

examples of Estate Farming, mostly in the coffee, tea and rubber plantations. Under this system the land is first acquired and the State then auctions the land to private capitalists or a corporation or a syndicate subject to certain conditions relating to minimum wages, conditions of work, etc. On these farms modern technique and most improved variety of seeds and fertilisers are used. It is held that such a system leads to the fullest utilisation of land (by the use of modern methods of production), and provides fair wages and wholesome conditions of work to labourers.

But in India, such a type of farming cannot be recommended even accepting that with proper safeguards it can lead to improved land utilisation, because it would deprive the agriculturists of their rights in land, turn them into mere wage-earners and subject society to capitalist control in such a vital matter as supply of food. It would also create the problem of displaced personnel. Even if most of the processing of agricultural products is done on the farm itself and if the by-products are used for suitable manufacture on the spot, the main difficulty in the way of any great expansion of such farms would be to find men with vision, sympathy and enterprise so necessary for such undertakings. Hence, the adoption of such a system also cannot be given attention to.

(iii) Collective Farming

Under this system the ownership of all lands, stock and capital vests in the community as a whole. Private property in the land and the individual holdings are completely abolished. Members of the collective farm are treated as equals; no distinctions are made between one member and another on account of birth or inheritance. The cultivation is carried on the whole farm as one unit of organisation under a Management Committee elected from among the members. The Board of Management chalks out the programme of work, direct and supervises agricultural operation, organises credit, finance and marketing. The profits of the farm may be divided into a number of ways according to the amount and quality of work with special rewards for efficiency. Such a type of farming is carried on in U. S. S. R. But high ideals cherished for does not seem to have been realised. For according to Naum Jancy, "The results are not appreciable and the system as adopted in Russia is not compatible with any other form of political system The collectivisation has reduced the per capita income of farm population by almost 10% between 1927 and 1937-8 as a result of huge State exactions of farm produce accompanying the change from peasant farming."

Encouraged by the success of Russian collectives some enthusiasts recommend collective farming to India as well but India has accepted neither the political nor the economic

philosophy of Russia. As things stand in this country, *i. e.*, individual ownership of land has been in existence from times immemorial, there is a deep attachment to the ownership of land, it would be improper to abolish private property in land while leaving intact that in other means of production, any proposal which involves the abolition of this valued right is bound to be severely opposed by the peasant owners and also the hereditary tenants. Apart from this the collective system leads to regimentation and centralisation and to that extent it involves the loss of individual liberty and initiative. Hence, under the existing conditions collective farming will not suit us.

(iv) Peasant Proprietorship

Under this system all intermediary rights in the land are abolished and the land belongs to the tillers of the soil. Those who have been cultivating the land continuously for a period of 6 years (according to the Agrarian Reforms Committee) should automatically get the full occupancy rights. The peasant possesses a permanent inheritable and transferable right in land. He himself cultivates the land and pays the revenue fixed on his holding to the State so that there exists a direct connection between the peasant and the State.

It is claimed that such a system will give maximum employment to the labour available but it will bring about economic decentralisation and give an independent means of support to the majority of the producers ; it will preserve liberty and democratic rural society and establish social stability and self-respect ; will give the greatest possible yield per acre and maintain maximum soil fertility and above all it will suit our present social structure and satisfy the peasant's love for land.

But a little consideration will show that peasant proprietorship is impracticable, besides it will not considerably help in effective solution of our agricultural problems. Majority of our farms occupied by the peasants are dwarf-sized and until solution is found it will not increase our production nor remove poverty of the cultivators. Peasant proprietorship does not offer any effective remedy for this. Reclamation of new lands will also not help in increasing the size of holdings nor will the re-distribution of large farms among small holders be of any significant help. Besides these, though it is true that there would be fewer transfers of land as there would be no landlord with a right to eject his tenant, yet so long as land remains a marketable commodity, sale and purchase of land would take place and then it would be difficult to prevent multiplication of holdings further. And with small holdings the disadvantages connected therewith will operate. Hence, under the existing circumstances it would be unprofitable to introduce peasant proprietorship in the country.

(v) Co-operative Farming

Under this system each cultivator retains his rights in his own land but cultivation operations are carried on jointly. The expenditures are met from a common fund and deducted from the gross income. The net income is distributed among the cultivators in proportion to the land belonging to each. Co-operative farming avoids the tendency to draw uniformity, regimentation and bureaucratisation. It also effectively removes the weaknesses of the individualist petty farming. In fact, it is the only workable way of securing the benefits of large-scale farming without at the same time affecting any of the social institutions and interfering with the framework of private property.

It is true that there are many theoretical, financial and administrative difficulties in the way of introduction and working of this system yet the whole system is so well suited to the genius of our country that every effort need be made, even if that be at the cost of some sacrifice, to create conditions conducive to its establishment and successful working.

A study of the economic history of Palestine, Italy and U. S. A., reveals the successful part co-operative farming has played in making maximum use of land as well as in moulding the social life of the settlers. If we want to promote and preserve the democratic way of life for the new settlers and derive at the same time maximum advantage in the field of production from the reclaimed land brought under the plough, co-operative farming in some form or other will have to be adopted.

The Co-operative Delegation to China, under the chairmanship of Shri Patil, 1956, has expressed an emphatic view that co-operative farming is both desirable and necessary for promoting employment and agricultural production.¹

The pertinent question to be considered, therefore, is whether State farming, capitalist farming, collective farming or co-operative farming is most suitable in Indian conditions. It must be borne in mind that in the existing conditions of the country the State farming should not be taken except where land is already held by the State and for the purpose of experiment and demonstration. The main motive of capitalist farming is generally profit and not the interest of the farmer. It suffers from usual defects of a capitalist organisation. Therefore, this system cannot be recommended. Collective farming is also not suitable for our country because it will mean expropriation and, therefore, the deep attachment of

¹ For fuller details on this respect, refer to Author's Article, *Co-operative Farming : Perils and Projects*, in *Banker* August, 1957.

the Indian farmer to the ownership of land will seriously stand in the way of its introduction. The problem, therefore, is then of the introduction of a method of farming which without affecting any of the fundamental social institutions or customs and interfering with the framework of private property will give increased production. Hence, the only method suitable for adoption in the existing circumstances of India is one which combines the preservation of proprietary rights of the cultivators with co-operative farming.

AGRICULTURAL POLICY AND THE GOVERNMENT

In a predominantly agricultural country like India with economically poor and intellectually ill-advanced peasantry the duty of agricultural development devolves upon the shoulders of the State. The State has rendered much help to the agriculturists. It has constructed huge irrigation works, extensive roads and railways, it provides credit for agricultural improvements (though on a limited scale); it has initiated and controls and supervises the co-operative movement and it has passed many legislative measures for the protection of the tiller of the soil from the rapacity of the moneylender and the landlord. Moreover, through its Medical, Public Health and the Veterinary Departments it seeks to preserve and improve the health of the agriculturist and his livestock. With reference to the latter it has established and maintained special cattle-breeding farms to improve the breeds. The Education Departments also do their mite to spread literacy in the rural areas.

Early Agricultural Policy

For a long time the policy of the Government of India towards agriculture had been of apathy and drift. The East India Company was interested in commerce rather than agriculture. After the War of Independence, 1857 when the Crown replaced the Company the main objective of the British policy was administrative consolidation rather than economic regeneration. A series of severe famines that occurred in India in the last quarter of the 19th century roused the Government to the need of looking into the ills of Indian agriculture. The Famine Commissions of 1880, 1898 and 1901 and the Irrigation Commission of 1903 made constructive suggestions for the improvement of agriculture in India. But the Government policy was mainly confined to palliatives like the revenue remission, famine relief and takavi loans.

The Famine Commission of 1880 recommended that it was unfortunate that agriculture formed the sole occupation of the mass of population and pointed out, "No remedy for the present evils can be complete which does not include the introduction of a diversity of occupations."¹ But as the Royal Commission on Agriculture puts it, "The Government of India took no immediate action on the proposals."²

1 The other proposals of the Commission were : (i) The revival of the Department of Agriculture of the Government of India to be entrusted with "the duty of collecting experience of past famines and of undertaking definite and permanent charge of administration of famine relief ;" (ii) the simultaneous formation in all provinces of Departments of Agriculture with a large subordinate establishment working under each Director of Agriculture ; (iii) the distribution of loans to farmers by the Government on the security of land ; (iv) the appointment of special Courts to enquire into rural debts with a view to equitable reduction and payment by instalments.

2 Report, *Op. Cit.* pp. 17-18.

In 1889, Dr. J. A. Voelcker, Consulting Chemist to the Royal Agriculture Society, was sent out by the Secretary of State for India "to advise upon the best course to be adopted in order to apply the teachings of agricultural chemistry to Indian agriculture and to effect improvements in it." Dr. Voelcker toured in different parts of India till 1891 and recorded his views and conclusions in a Report on Improvement of Indian Agriculture. He held that the methods followed by the Indian agriculturists were not as backward as they were believed to be and were best suited to the Indian conditions and to the different soils in India. He opined that the differences in agricultural conditions were due to three factors, *viz.*, (i) Differences "inherent in the people themselves" as cultivating classes, *e.g.*, the fact that farmers while from certain castes and races are not good at farming while those belonging to others are good cultivators, (ii) Differences arising from purely external surroundings such as : (1) natural causes like climate, soil, irrigational facilities, manure, wood, grazing and (2) economic or political conditions like the relative ease or difficulty of living, paucity or pressure of population, smallness of holdings, want of capital, defective land tenures ; and (iii) Differences "arising out of want of knowledge," for instance, the existence of diversity of agricultural practices in different parts of the country. He, however, laid down that the systematic prosecution of agricultural enquiry and the spread of general and agricultural education among the peasants would go a long way to improve the lot of the Indian farmer. He recommended the adoption of certain measures, which may be summarised as follows :—

(a) The spread of general and agricultural education, and the preparation of suitable text-books in the vernaculars for the purpose ; (b) the extension of canals and other means of irrigation to tracts where they are required ; (c) the more energetic working and popularising of the system of Taccavi advances for well-digging and similar purposes ; (d) the institution of Agricultural Departments of organised enquiry to ascertain the irrigation requirements of each district ; (e) the creation of reserves of wood and fodder ; the planting of trees along canal banks and railway lines and the further encouragement of arboriculture ; (f) the continuation and extension of experimental research aided by chemical science in reference to new crops, methods of cultivation, manures, etc. ; (g) the trial of new implements at Government experimental farms and the distribution of approved implements among the cultivators ; (h) the distribution of seeds from agricultural farms ; (i) the location of stud bulls at Government farms and the encouragements of improved breeding of cattle.

Dr. Voelcker attended the Agriculture Conference of 1890 held in Simla which arrived at two noteworthy decisions : *Firstly*, that the scope for improvement in Indian agriculture was great

enough to justify the establishment of a sound system of scientific investigation into the agricultural education. *Secondly*, that an expert was required for a scientific investigation. This led to the appointment of an Agricultural Chemist to the Government of India for conducting research into problems relating to agriculture. The need for development in other directions was also felt soon. In 1901 an Inspector-General of Agriculture and a Mycologist and in 1903 an Entomologist were appointed. About this time Mr. Henry Phipps of Chicago offered a donation of Rs. 530,000 to Lord Curzon to be applied to some object of public utility preferably connected with scientific research. This donation was used for the establishment of the Pusa Research Institute. The post of the Inspector-General of Agriculture was abolished and it was replaced by Director of Agricultural Research Institute at Pusa, who was also the Agricultural Adviser to the Government of India till 1929. This Institute was established at Pusa, in Bihar in 1903 with fully equipped laboratories, an experimental farm and a cattle farm. An agricultural college was attached to it in 1908 to serve as a model for the agricultural college in the provinces and to provide a course of advanced education.¹

In 1905 the need for an agency in each province to undertake agricultural research and to promote agricultural improvement by evolving improved varieties and methods suited to the conditions prevailing in India and popularizing them had been clearly realised. The successive Famine Commissions since 1901 had pointed out the need for and the possibilities of agricultural improvement and recommended a strengthening of the research staff in the Agriculture Departments in all provinces, and emphasised that "the steady application to agricultural problems of expert research was the crying necessity of the time." The result was a thorough reorganisation of the Agriculture Departments in 1905 in the Centre and the provinces.

An All-India Board of Agriculture was set up in 1905 in order to co-ordinate the activities of the Provincial Departments. After the Reforms of 1919, agriculture became a transferred subject and since then it is under the charge of a Provincial Minister. The Agricultural Department of the Government of India is concerned now with the matters of all-India importance and runs the following institutions, *viz.* :

(1) the Agricultural Research Institute, Delhi (which was transferred from Pusa to New Delhi in 1936),

¹ The Central Research Institution at Pusa was expected to (1) prove a focus of agricultural research all over India, (2) to serve as a model for a similar institute in provinces (3) to initiate the programmes of agricultural research, (4) to evolve better methods and better varieties of crops and to (5) pursue further promising experiments begun in any of the provinces.

- (2) Indian Institute of Veterinary Research at Mukteshwar,
- (3) The Indian Dairying Institute at Bangalore,
- (4) The Creamery at Anand,
- (5) The Lac Research Institute at Ranchi,
- (6) The Indian Cane Breeding Station at Coimbatore,
- (7) Forest Research Institute at Dehradun,
- (8) The Sugar Technological Institute at Kanpur,
- (9) The Central Rice Research Institute at Cuttack,
- (10) The Central Potato Research Institute at Patna,
- (11) Central Vegetable Breeding Station at Kulu,
- (12) Central Marine Fisheries Research Station, Mandapam, and
- (13) Central Inland Fisheries Research Institute, Manirampur

The Royal Commission on Agriculture

A Royal Commission was appointed in 1926 to examine and report on the present conditions of agricultural and rural economy in India and to make recommendations for the improvement of agriculture and the promotion of the welfare and prosperity of the rural population and in particular to investigation :

“(a) the measures now being taken for the promotion of agricultural and veterinary research, experiment, demonstration and education, for the compilation of agricultural statistics, for the introduction of new and better crops and for improvement in agricultural practice, dairy farming and the breeding of stock,

(b) the existing methods of transport of marketing of agricultural produce and stock,

(c) the methods by which agricultural operations are financed and credit afforded to agriculturists,

(d) the main factors affecting the rural prosperity and welfare of the agricultural population and to make recommendations.”

The problem of land revenue and land tenure was excluded from the scope of the Commission's enquiry, although these were among the basic problems of Indian agriculture. The Commission issued a comprehensive report in 1928. The recommendations of the Commission cover a very wide field including subjects like subdivision and fragmentation of holdings, improvement of livestock irrigation, marketing, co-operation, rural education and rural reconstruction. Generally speaking the aim of the recommendation, has been to bring about greater efficiency throughout the whole field of agricultural production. In order to render the business of farming more profitable to the cultivator the Commission emphasized the necessity of widening the outlook of the peasant and stressed the importance of Government initiative in promoting agricultural progress. One of their basic suggestions

was that "rural problem should be tackled as a whole in all its various aspects simultaneously." A very important recommendation of the Royal Commission was the creation of the Imperial (now Indian) Council of Agricultural Research. The Commission also emphasized the urgency of widening the outlook of the cultivator himself so that he may become not only a better instrument of production but also a better man. It also defined clearly the responsibility of the Government. "We have no hesitation in affirming that the responsibility for initiating the steps required to effect this improvement rests with the Government."

Functions of the State Agriculture Departments

The Reserve Bank publication on 'State Aid to Agriculture' thus sums up the work of the State Governments: "The measures adopted by the State Government include enactment of laws to control money-lending, to scale down debts and ensure fixity of tenure; starting grow more food schemes and the giving of free grants, loans and subsidies in this connection; distribution of improved seeds, manures, and fertilizers on a subsidised basis, parting of irrigation to improve the soil, attempts to grow more units and vegetables, efforts to improve the quality of the livestock and so forth."

The main functions of the State Governments comprise of the supervision and control of (i) Agricultural Education, (ii) Agricultural Research, (iii) Demonstration and Propaganda, (iv) Technical improvements, and (v) Distribution of improved seeds, implements, and artificial manures, etc.

Agricultural Education

Instruction in agriculture is imparted at different levels. At the primary stage agricultural bias is sought to be given by means of Nature Study. In Bombay, Madhya Pradesh, U. P., Rajasthan and other States agricultural middle schools have been opened to impart practical training in agriculture and the trainees are expected to go back to the land after completing their course. In some States like the Punjab, agriculture is taught as a subject in vernacular middle schools and the high schools. There is also a provision for F. Sc. in agriculture. Advance course in scientific agriculture is provided in the Agricultural Colleges at Poona, Coimbatore, Nagpur and Kanpur. The counterpart of Lyallpur College has been started at Ludhiana in East Punjab. Post-graduate training in agriculture is imparted at the Indian Agricultural Research Institution, New Delhi. These colleges have provided staff for administrative posts in the agriculture departments; in very few cases have they produced the modern farmer.

There are 22 Agricultural Colleges in India which impart agricultural education both theoretical and practical. They also carry on research on agricultural problems either independently or under the guidance of the ICAR, if the subject be of all-India importance. The research relates to the evolving of better varieties of seed from the point of yield and resistance to disease and drought to which crops are subject, better implements and manures, etc. The results of these researches are then tested on experimental farms attached to the Colleges or the Research Institutes

Indian Council of Agricultural Research

The Indian Council of Agricultural Research was set up in 1929 on the recommendations of the Royal Commission on Agriculture. The Council's Advisory Board consists of experts representing the States, the Universities and scientific bodies, while its Governing Body is composed of the State Ministers of Agriculture and the representatives of the Parliament and commercial interests. In general the Council co-ordinates research work, suggests programmes of research, gives financial assistance for approved schemes and also undertakes schemes of its own. It acts as a 'clearing-house' for scientific information.

The Council has a number of Standing Committees at work, the more important of which are : the Wheat, Rice, Sugar, Animal Nutrition, Cattle Breeding, Dairying, Fertilizers, Locust, Soil Science, Dairy Farming Oil Crushing, Industry, the Fodder and Grazing Standing Committees.

The principal whole-time officers of the ICAR are the Vice-Chairman and the Principal Administrative Officers, the Secretary, Agricultural Commissioner, the Government of India ; the Animal Husbandry Commissioner with the Government of India ; the Agricultural Marketing Adviser ; the Director, Imperial Institute of Sugar Technology ; the Statistician, the Officer-in-Charge, Animal Husbandry Bureau and the Editor, Council's Journal.

Several schemes of the Council have been carried out through the various institutions. In the words of the Russel Report, "A vast amount of primary work extending over a wide range has been accomplished." The Report opined that a "stage is now reached when a reorientation of the Council's work should be considered." According to the same Report the great need of the hour is "a fuller use of existing knowledge rather than the accumulation of mere knowledge for work on cultivators field rather than in the laboratory." Following the recommendations of the Russel Report, the Council has undertaken an examination of the methods of demonstration and propaganda.

The Council was completely reorganised in 1951 to enable it to discharge its responsibilities more effectively, especially in the field of extension work. Steps have also been taken to set up an Extension Service on a national basis to bridge the gulf between the research workers and the farmers. The Governing Body is now assisted by a Board of Research and a Board of Extension.

The annual grants made to I. C. A. R. fall under two main heads : (i) an annual Government grant for running the administration. This varies from year to year according to requirements ; (ii) payment of the net-proceeds of the cess on agriculture produce. Besides these, specific grants are made to I. C. A. R. for undertaking certain schemes from time to time.

Besides co-ordinating and guiding research, the Ministry of Food and Agriculture also maintains a number of Research Institutes — mentioned earlier. This Ministry has also set up a number of Central Committees to promote the production and their marketing. The Indian Central Committee for Cotton (Bombay), Jute (Calcutta) tobacco (Madras), oilseeds (New Delhi), coconut (Ernakulam), sugarcane (New Delhi), arecanut (Kozhikkode), lac (Ranchi) operate and subsidise, a number of research scheme at various stations and sub-stations.

These committees are financed by proceeds of a cess levied on the particular commodity. For instance, for Cotton Committee there is a cess of As. 4 per bale of 400 lbs. of cotton ; for coconut, a cess of As. 4 per cwt. on copra consumed in Indian mills ; for lac, the cess is As. 14 per md. of export of lac ; and As. 10 for refuse lac exported ; for oilseeds, the cess is As. 1 per md. of oil extracted in mills and anna 2 per md. of oilseeds.

The I. C. A. R. has done some useful work in evolving new and disease-resistant varieties of crops, especially wheat—N. P. 809 variety—rice, millets and pulses and tubers. Promising results have been obtained in evolving high-yielding varieties resistant to parasitic weeds. In 1953-54, the I. C. A. R. sponsored 128 research schemes in agriculture, animal husbandry, statistics, etc., involving a total cost of Rs. 44 lakhs.

After 1947, it was decided to plan agriculture and animal husbandry on a regional basis. According to this decision, research schemes hereafter will be classified as fundamental, regional and local. The fundamental items will be allotted as far as possible to the Central Institutes, Universities, and other stations such as the Central Commodity Research station ; regional problems are to be financed on a contributory basis by ICAR and the province best suited to take up a particular item of research ; and local problems are to be assigned to the respective Provincial Departments. The

regions are five in number, *viz.*, Wheat, Rice, Malabar, Millet and Himalayan. In the Animal Husbandry side, the four regions to be set up are (i) Dry Northern Region (Wheat) comprising the Punjab, Western U. P., Western Madhya Pradesh, Madhya Bharat, Rajasthan, and P. E. P. S. U. ; (ii) West-Eastern (Rice) Region comprising Assam, West Bengal, Bihar Orissa, Eastern Madhya Pradesh, Eastern U. P., and North-East Madras ; (iii) B. Coastal Region comprising the two coastal strips in South India bordering on the Eastern and Western Ghats, parts of Mysore, Coorg and Travancore-Cochin ; (iv) Southern (Millet) Region comprising Jhansi region of Uttar Pradesh, Madhya Pradesh, Madhya Bharat, Eastern Hyderabad, West Madras, Bombay and part of Mysore ; (v) Temperate Himalayan Region, consisting of two sub-regions, *viz.*, the Eastern Himalayan Region including Assam (hilly), Sikkim, Bhutan, Nepal and the Western Region including Kumaon, Garhwal, Simla, Kulu, Chamba and Kashmir.

There will also be local Committees to deal with the presence in each region of small packets which will not be representative of the general conditions prevailing in that region.

More than 100 schemes covering all aspects of animal husbandry are in progress. The main emphasis has been on the control of diseases (the chief being the rinderpest). Methods of immunization are being extensively used. Disease investigation officers have been engaged in all States. A complete veterinary survey has been conducted. A devastating sheep disease called *Gillar* has been successfully located by a simple method. Basic information concerning animal feeds also has been collected. It has been found, for example, that feeding value of rice is enhanced by washing and that fish and bonemeal can be used in our climate with impunity. Aquatic and monsoon grasses have also received attention. It has been established that unbalanced diet is more injurious to animals than adverse climate. Research in cattle breeding has resulted in the production of improved sires. Breeding research in sheep has been directed to the production of finer wool. Poultry breeding has been directed to show that Western birds can be acclimatized and production and yield of local birds can be increased by cross-breeding.

Research in dairying has resulted in the production of vegetable rennet and manufacture of lactose as a cottage industry. Methods of neutralizing high acidity of ghee by the use of lime and of detecting adulteration of ghee with *vanaspathi* have been discovered. A simplified ghee boiler and improved village utensils have been designed.

Research has also been directed towards obtaining knowledge concerning indigenous varieties of bees, their domestication and

exploitation in the wild state so that improved methods of bee-keeping can be taught to the villagers. A cheap dressing of hides and skins also has been discovered.

The Council has carried out schemes to improve the economic conditions of some villages. Successful experiments have been conducted in mixed farming and dry farming. It has improved the system of agricultural statistics and crop forecasting.

The Governing Body of the Council in its 18th meeting held in Delhi in 1949, made several important decisions regarding fundamental principles of agricultural research including reorganization of research on regional basis, a comprehensive plan of crop-cutting survey to estimate crop yields, a model scheme of research on agronomic, varietal and manurial trials to assess optimum yields and setting up an Information Bureau to collect and disseminate results of research.

When all is said it has to be admitted that the achievements of agricultural research have been very disappointing. In the words of Russel Report, "In view of the fact that Indian experiment stations have been functioning for so many years it seems at first surprising that so little of the work done has found its way into the general body of the agricultural science as expounded in standard treatise."¹ The laboratory has failed to establish a living and organic link with the field. Unless "the stream of knowledge is duly canalized so as to fertilize the actual fields and farms its research work is of little use. Divorce between the farm and the laboratory prevents any fruitful use of the results of research. Hence, better and vigorous publicity is needed. In the second place, research is being conducted in an isolated fashion and there is little co-ordination. As in our agriculture, so in our agricultural research, 'fragmentation' has been the bane."² Another defect is that little attention is being paid to the economic aspect of agricultural research. Unless methods suggested are paying and their application is within the means of cultivator, the research is of little avail. A close co-ordination is also needed between agricultural research and economic research. Also, closer collaboration is required between the technical experts and the economists. For instance, investigation into food crops must be conducted in consultation with human nutrition experts. Above all, "Research should be inspired by a sense of relevance and urgency in view of the serious food situation."

Development Commission

The Russel Report had further recommended that a Development Commission, which could be combined with the Council,

¹ *Russel Report*, p. 6.

² Nanavati and Anjaria, *Indian Rural Problem* p. 101.

should be set up. The Commission should plan large-scale improvements and suggest ways of raising the standard of living in the villages. It should take up the following problems :¹

1. Soil conservation, deterioration and loss from soil exhaustion, soil erosion, salt and alkali.

2. Crop production, especially the planning of cropping schemes, the balance between cash, food and fodder crops, the fusion of animal husbandry and agriculture, the improvement of grazing land, the taking of action on the results of marketing and other economic enquiries.

(3) The exploitation of discoveries or processes of commercial importance. The Commission should bridge the gap between the laboratory and the farm and give information and advice to the commercial body undertaking the work.

(4) The multiplication and distribution of needs of approved varieties of crops and trees.

(5) The improvement of village roads.

Demonstration and Propaganda

The next step after research is to demonstrate the result on the model (or demonstration) farm or on the cultivator's own field. It is also necessary to carry on a sustained and vigorous propaganda in favour of the new method when its success has been demonstrated under the very conditions in which the cultivator lives. The improved seeds are produced on a large scale in Government farms or are purchased from private producers. Similarly, modern implements are manufactured under Government supervision. Then arrangements are made to supply seeds, implements and manures to the cultivators through stores or depots maintained by the Government at convenient places. Co-operative societies are also used as a medium of approach to the cultivators through stores or depots maintained by the Government at convenient places. Co-operative Societies are also used as a medium of approach to the cultivator. Farmers' weeks or fairs are organized by the department and agricultural assistants tour the countryside carrying the message of science to the remote villages.

Technical Improvements

Introduction of improved varieties, control of pests and diseases, irrigation, prevention of soil erosion, better tools and implements, better rotation of crops and the use of more fodder

1 *Ibid.*, pp. 70-71.

crops with a view to obtaining more farmyard manure are some of the technical improvements effected in Indian agriculture through official agencies. About 80% of the total area under sugarcane and half of that under jute are sown by improved seed. Marketability in the case of commercial or cash crops and nutrition value in the case of food crops are the guiding principles. A nutrition expert has been appointed who serves as a liaison officer between the nutrition laboratory at Conoor and Agricultural Research station at Delhi.

Russel and Wrights Enquiry

The Agriculture Commission had also recommended that the work of Indian Council of Agricultural Research should be periodically reviewed by experts. Hence in 1936 two experts, Sir John Russel (Director, Rothamstead Experimental Station) and Dr. N. C. Wright (Director, Hannah Dairy Research Institute, Scotland) were invited to conduct an enquiry. Sir Russel reviewed the Council's work in connection with crop production. He suggested some useful methods by which the results of research can be made more readily available to the cultivators. Other recommendations relate to the methods for tackling insect pests, dairy-farming research scheme, the need for work on cash crops to be done in conjunction with nutrition experts, the establishment of better organisations for the distribution of seeds of improved varieties, improvement of water supply for crops, including the establishment of a Central Irrigation Station and a Soil Conservation Committee and a Crop Production Committee to deal with the consideration of cropping schemes (on the lines adopted by the Crop Planning Conference, 1934), to arrange for working of control measures in relation to pests, insects, etc.

While Sir John Russel was reviewing the progress in applying science to crop production, Dr. Wright suggested measures in connection with the improvement of cattle and dairy industry. He emphasised the necessity of at least doubling the output of milk (*i.e.*, between 700 and 800 maunds) annually. He recommended considerable reorganisation and development of research, education and advisory services. The recommendations included "reconstitution of Bangalore Institute, Indian Dairy Research Institutes at more suitable centres, extension of Anand Creamery, improvement in training for Indian dairy development and establishment of Provincial Advisory Services for dairy industry including the appointment of Dairy Development Officers in each province." He also advocated a greater use of experiment and demonstration farms so as to make them valuable nuclei for breeding and distributing the pedigree milking stock and proper centres for a study of mixed farming methods. An animal Geneticist should deal with the problems of breeding and genetical research should receive

more attention. He also laid proper emphasis on unification of livestock improvement and veterinary work under a single department of animal dairy husbandry in each province.

Grow More Food Campaign of 1943-48

With the fall of Burma, the prices of foodstuff began to soar up. As food deficiency was apprehended the Indian Central Cotton Committee and the Advisory Board of the Imperial Council of Agricultural Research made the following recommendations in 1942 for growing more food :

1. An increase in the area under food and fodder crops by (a) bringing new land including fallow land under cultivation ; (b) double-cropping ; (c) diverting land from non-food crops to food crops.
2. An increase in supply of water for irrigation by the improvement and extension of existing irrigational canals, the construction of additional wells.
3. The extended use of manures and fertilisers.
4. An increase in the supply of improved seeds.

Accordingly, the G. M. F. Campaign was started in 1943. During the first four years, grants and loans were given by the Centre to the States to enable them to increase production. Central assistance is, however, now given only for specific programmes. The Campaign covers two types of schemes, viz., works scheme and supply schemes. The former include the construction and repair of wells, tanks and small dams, channels and tube-wells and installation of water-lifting appliances, schemes of contour-bunding, clearance and reclamation of wastelands. The supply schemes cover the distribution of fertilisers, manures and improved seed to the agriculturists at concessional rates. Side by side preservation of country's cattle wealth and the import of agricultural implements and tractors is also emphasized.

The Campaign was reoriented during 1951-52 so as to make its scope intensive rather than extensive. Without affecting the programme for increased food production in any way, the Integrated Production Programme was formulated in 1950-51 for the achievement of relative self-sufficiency in food, cotton, jute and sugar. The year following it became part of the First Five Year Plan which has been, in turn, integrated in a Ten Year programme of Land Transformation. Most of the central assistance envisaged in the Plan for agricultural development has been made available to the States out of the allotments made for the G. M. F. Campaign. The new policy governing the allocation of the G. M. F. funds envisages :—

(i) greater emphasis on productive schemes of a permanent nature such as irrigation and land development works ;

(ii) the execution of special tube-well programmes on a fairly large scale ;

(iii) the supply of improved seeds, manure and fertilisers in compact areas with assured rainfall or irrigation ;

(iv) assistance to Schemes for the improvement of livestock, fisheries and horticulture ; and

(v) the adoption of the principle that Central assistance for schemes should be mainly in the form of loans and that the element of subsidy should be progressively reduced.

The following table shows the amount of financial assistance rendered by the Government of India to the States for undertaking various G. M. F. Schemes, during the years 1951-52 to 1954-55 (actuals) and for 1955-56 (sanction)¹ :—

Name of the Scheme	1951-52	1952-53	1953-54	1954-55	1955-56
	(In Crores of Rs.)				
Minor Irrigation	7.78	7.70	9.48	7.95	12.99
Land Reclamation	2.77	3.74	3.06	3.33	3.18
Manures and Fertilisers	1.47	1.50	6.42	7.44	9.65
Seeds	0.40	0.55	0.48	0.65	1.22
Other Schemes	1.52	1.25	0.79	0.71	0.93
Total	13.94	14.74	20.23	19.98	27.97

The G. M. F. Campaign did not make much progress till 1947. In spite of the expenditure of crores of rupees, the result achieved was not very encouraging. Though Rs. 32 crores were spent yet it could not increase the production of food, nor could it increase the production of cotton and jute. Besides there was a little increase in the area irrigated due to the department being short-handed, difficulty of obtaining raw materials and machinery and shortage of skilled labour.

Secondly, the propaganda remained confined to the urban areas and the literates, and the cultivating masses did not enjoy the full benefits of production schemes.

Thirdly, the money grants and seeds were spent largely on consumption and the material given for the construction of irriga-

¹ *India*, 1957, p 246

tion schemes on buildings, and majority of the schemes operated only on *patwari* papers or inspectors' note-books.

Fourthly, the Campaign was not designed to meet the difficulties of the farmer, and the lack of check and supervision over the assistance gave lead to serious leakages. The whole scheme ignored the basic principles of planning altogether. This was due to incompetence, unplanned and unrealistic approach, official bungling and complete disregard of enlightened public opinion.

Fifthly, the essential factors that govern the production of food were not considered. The whole problem of production was viewed in isolation and not against its actual background of subdivided fragments of land tilled with inadequate equipment and insufficient manures.

Sixthly, planning was done at the top and the things and measures were forced on the unwilling and indifferent mass of peasantry without adequate machinery or agency to enthuse people for action. There was a lack of living contact with the farmer and the Government.

The Campaign thus resulted in diminishing returns. Land under cultivation increased at very high costs, but productivity either declined or remained stationary. The results were reviewed by Thakurdass Committee (known as Second Food-grains Policy Committee, 1948). While appreciating the exceptional seasonal conditions and the difficulties in obtaining adequate supplies and equipment, they said, "By and large the Campaign did not produce the results aimed at. The measures which were taken were doubtless in the right direction, but the objectives were too diversified, and the effort was inadequate and in most areas the necessary vigour was lacking."

The Committee recommended, among others, the following measures :—

(i) Ten million tons of extra food should be produced within the next five years.

(ii) To ensure full collaboration between the States and the Centre and rapid reclamation of wastelands three bodies—a Central Board of Agricultural Planning, a Board of Agriculture in each State and the Central Land Reclamation Organisation—should be established.

(iii) Famine tracts should be rehabilitated, intensive cultivation should be undertaken, and production of substitute foods should be increased.

(iv) The development of agriculture must remain chiefly the concern of States while the Centre should concern itself mainly with co ordination of individual plans, procurement and allotment of essential supplies and the reclamation of wasteland in different units.

On these recommendations it was decided to reclaim 6.2 million acres of wasteland within next 6-7 years ; to sink 4,500 deep tube-wells ; to supply chemical fertilisers and to increase the fish supply from marine resources by establishing 5 well-equipped marine fishing stations. The total cost of the scheme was estimated to cost Rs. 271 crores. The Government also established at Sindri a Fertilizer Factory and Institute of Food Technology at Mysore. It also adopted the schemes for the control of damage of crops due to pests and insects and for the construction of warehouses under the Village Co-operative Societies

Grow More Food Enquiry Committee(1952)

The Grow More Food Enquiry Committee was appointed under the chairmanship of Sri V. T. Krishnamachari with 11 members by the Government of India, on 8th February, 1952 with the following terms of reference :—

“(i) to examine the categories of G. M. F. schemes for which funds have been sanctioned and the extent to which the utilisation of funds has been in conformity with the intended purposes.

(ii) to assess the relative efficiency of different categories of schemes for increasing food production in the context of available means and prevalent agricultural practices,

(iii) to examine whether the results achieved by the G. M. F. Campaign since April 1949 in terms of units of work, acreage benefited and increased food production over a specified base figures has been commensurate with the scale of expenditure involved.

(iv) to suggest measures for ensuring the optimum utilisation of the available production requisites by the cultivators and for checking up the actual expenditure of money and the results achieved.”

This Committee went through the problem entrusted to it thoroughly and produced its report in July, 1952. This report is divided into six chapters. First chapter deals with the origin of the food problem. In second and third chapters, an account of the progress of G. M. F. Campaign during its various phases, its history, financing, organisation and results is given. In chapter fourth, results of the different schemes are set up. Chapters fifth and sixth give the proposals and recommendations regarding the future policy.

The Committee concluded that the G. M. F. Campaign had certain facts to its credit,¹ viz.

(i) Large sums of money spent on various aspects of food production has no doubt made a permanent contribution to the food problem. The percentage of expenditure on permanent schemes of minor irrigation and land improvement to the total expenditure was 24% in 1947-48 ; 56% in 1948-49 ; 80% in 1949-50 and same in 1950-51 and 84% in 1951-52.

(ii) As a result of distribution of new seeds and fertilisers there was an increased production in the areas where they were made.

(iii) Good results have been achieved in the production of cotton and jute. In cotton production increased from 21.9 lakh bales in 1947-48 to 33 lakh bales in 1951-52 and in jute from 16.6 lakh bales to 46.8 lakh bales during the same period.

(iv) Although the G. M. F. operations covered only a small proportion of the total cultivated area (2 to 4%) yet never before were sustained efforts made even on such a scale as in these years. Their effect has been to spread knowledge of the possibilities of improved agriculture among a wider section of the agricultural population of India than at any previous period:—

But the Campaign also suffers from the following defects :

Firstly, its scope as conceived was too narrow and restricted. Changes were made in the main objectives placed before the country from time to time. There was first the self-sufficiency in foodgrains. Then came the integrated policy for foodgrains, cotton and jute. Other additions followed in quick succession, 'Key Village Scheme' for improvement of livestock, emphasis on fisheries, development, the extension movement, land transformation, etc. This reorientation gave rise to differences of opinion in the country. It led to controversy as regards priority between foodgrains and industrial raw materials.

Secondly, the Campaign was regarded as a temporary one for achievement of self-sufficiency by a particular date and organised on that basis. The administration of the programme was placed in hands of special staffs, got together in short time whose activities were only imperfectly dovetailed with the regular development and other activities of the State Governments. Under these conditions the movement touched only a fringe of the population. It did not arouse widespread enthusiasm and became a national movement. Its objectives of supplying food at reasonable prices to urban population and eliminating imports in order to save foreign

¹ Report of the Grow More Food Committee, 1952, pp. 25-67.

currency had no appeal to the many millions of small farmers in the countryside. Nor had the States linked up the G. M. F. programmes with carefully thought-out, long-term plans for village development. The general tendency had been to regard the schemes financed by the Central Government as falling under a special category and to expand or curtail them from year to year, in advance with the financial allotments available from the Centre.

Thirdly, it was not realised that all aspects of village life are interrelated and improvements could not be split up into a number of detached programmes operating independently.

Fourthly, it was obvious that the finances and supplies in the shape of fertilisers, good seeds available for the Campaign could suffice only for a small proportion of the cultivated area in the country. Even these resources were, however, spread too thinly over large regions instead of being concentrated in the first instance in favourable tracts. In fact, the movement did not arouse nation-wide enthusiasm and did not become a mass movement.

The recommendations of the Committee are given below :—

(1) The G. M. F. Campaign should be enlarged so as to cover a wider plan for the development of village life in all its aspects. The administrative machinery of the Government should be reorganised and equipped for the efficient discharge of the duties imposed on it. The best non-official leadership available should be mobilised for guiding 60 million rural families in their efforts to improve their own condition. For associating the non-official leadership with the schemes of village development, panchayats, multi-purpose societies or the village production council may be utilised. Where such organisations do not exist necessary steps should be taken to set them up.

(2) An Extension Service should be set up for rural work which would reach every farmer and assist in the co-ordinated development of all aspects of rural life.

(3) The role of the Government of India should be confined to
(a) formulation of over-all policies and co-ordination of programmes of village development including targets of additional production;
(b) giving financial and technical assistance; (c) making arrangements for supplies and movement of essential materials and and (d) assessment of results of the programme.

(4) As between the different permanent schemes, prominence should be given to schemes of minor irrigation. Preference should

be given to repairs of existing works and minor schemes of irrigation.

(5) Before taking land reclamation programme in hand on large scale, systematic surveys of areas suitable for the purpose should be undertaken. Adequate steps should be taken to ensure that follow-up cultivation is undertaken on lands reclaimed by the Central Tractor Organisation. The land reclamation and mechanical cultivation scheme of the State Governments should be worked on a self-sufficiency basis. Facilities for repairs of spare parts and servicing in respect of tractors should be made available to the cultivators close at hand to ensure the success of mechanical cultivation.

(6) Adequate numbers of seed farms should be established for providing nucleus seeds. The system of registered growers for ensuring rapid multiplication is sound but care should be taken in selecting the growers and ensuring that they are assisted by the agriculture departmental staff in producing quality seeds. Adequate premia should be paid for per seed and provision should be made for multiplication of pure seed in 'protected areas'. Seeds should be made available in time and must be of good quality.

(7) To ensure greater availability of cow-dung for compost, the village panchayat should be assisted for planting trees on wastelands and supply of soft cake should be extended to areas where its economic distribution is possible. More efforts should be made to increase and popularise the use of green manures specially in irrigated paddy areas. Local manurial resources should be developed to the maximum extent.

(8) State Governments should take responsibility for dealing with widespread pests and diseases promptly. For stray cattle (i) *Gosadans* should be started, (ii) Subsidiary foods should also be increased, (iii) Crop competition schemes should be continued and extended. More attention should be paid to problems of dry farming in areas of inadequate rainfall. There should be set farms in such areas in which attempts should be made to find solution for difficulties of the farms. The extension staff should assist in translating to cultivators farms' improvements found practicable. Research should also be made on the cultivation of short-duration crops, (iv) Necessary action should be taken to put life into the millions of agriculturists in the country, instil in them the desire to improve their standard of living and furnish them with the assistance that will enable them to do so, (v) Government of India should make a declaration accepting the principle of guarantee of minimum prices, as this will provide incentive to agricultural production.

(9) In order to improve agricultural finance, the long and medium term loans should almost entirely be supplied by the Central Government and the States, but the short-term loans must be given by the Co-operative Movement. Until the movement develops, the Central Government, and the States must take an increasing share in providing the short-term finance.

(10) The procedure for granting *kharavi loans* to the agriculturists should be simplified and the admissible loans should be raised to 30 times the land revenue instead of 20 times as at present.

In 1954, after ten irksome years all controls on foodgrains were lifted and the policy of State procurement was abandoned. The large increase in the production of foodgrains during the last two years and the lifting of controls led to a fall in the prices of cereals and pulses which, in some isolated areas, reached low levels. In December 1954, the Government of India announced its foodgrains price policy. Under this policy, price support was given to foodgrains like jowar, bajra and maize. It was later extended to wheat, rice and grain. About the same time, control on the internal movement and distribution of cotton was relaxed. The increase in the production of oilseeds also led to the liberalisation of oilseeds exports.

First and Second Plans

The first Five Year Plan gave the highest priority to the development of agriculture the accent being on increase dproduction of food and raw materials. A substantial measure of success having been achieved in stepping up the tempo of agricultural production in September 1955, the Government of India announced its economic policy with special reference to agriculture, land and rural credit. This policy was based mainly on three factors: (i) maintenance of agricultural prices at a reasonable level, (ii) provision of marketing ware housing, and credit facilities and (iii) reform of the land system including the re-organisation of agriculture, both as a measure of social justice and as an incentive to greater efficiency.

The second Plan has enumerated four main elements of agricultural planing, viz. (i) planning of land used; (ii) determination of targets, both long-term and short-term; (iii) linking up of development programmes and Government assistance with production targets and the land use planning and, (iv) an appropriate price policy.

The first Five Year Plan allocated Rs. 240 crores for different programmes of agricultural development excluding those under the National Extension and Community Project schemes. The

corresponding provision in the second Plan is Rs. 341 crores as detailed below :

Head of Development	First Plan		Second Plan	
	(In crores of rupees)	Percent- age of total	(In crores of rupees)	Percent- age of total
Agriculture	196	81.7	170	49.9
Animal Husbandry	22	9.2	56	16.4
Forest and soil conservation ..	10	4.2	47	13.8
Fisheries	4	1.6	12	3.5
Co-operation including ware- housing and marketing	7	2.9	47	13.8
Miscellaneous	1	0.4	9	2.6
TOTAL ...	240	100.0	341	100.0

These figures bring out the shift in emphasis contemplated in the second Plan from a purely crop economy to a diversified agricultural economy. The agricultural programmes in the second Plan are intended to provide adequate food supplies for the growing population and the raw materials needed for an expanding industrial economy and also to make available large exportable surpluses of agricultural commodities.

Mehtha Enquiry Committee

Realising the need for a thorough study of the various aspects of the food problem, the Government appointed a committee to undertake the task. The committee, headed by Shri Asoka Mehtha, the P. S. P. leader, has been asked to :

(1) review the present food situation and examine the causes of the rising trend of food prices since about the middle of 1955.

(2) To assess the likely trends in demand and availability of foodgrains over the next few years, taking into account (a) the steps taken or proposed to be taken to increase food production, (b) the impact of growing development expenditure, increase in population and urbanization on the demand for marketable surpluses and (c) the availability of foodgrains surpluses from abroad in relation to requirements and in the light of foreign exchange position.

The committee, the appointment of which was announced on June 24 last, has been given three months' time to submit its report.

State Measures to check Prices of Foodgrains

Notwithstanding the general upward trend in food output, food prices have shot up entailing great suffering for the middle and lower classes. To meet this situation the the Central Government has launched a five-fold programme to arrest price rising.

(i) Rise in prices has been sought to be checked by a credit squeeze. In June 57 a directive was issued by the Reserve Bank to the Scheduled banks asking them to reduce the advances against foodgrains and :

- (a) to raise the margin money to a minimum of 40%.
- (b) to reduce the aggregate level of advances against foodgrains in such a way that by 12th July, 1957 and in every week thereafter, the level in respect of rice and paddy should not be more than 66-2/3 per cent. and in regard to other foodgrains not more than 75 per cent. of the level obtaining in the corresponding week in 1956 ; and
- (c) not to sanction any fresh credit limits to anybody in excess of Rs. 50,000 against paddy and rice and also Rs. 50,000 against other foodgrains, nor to increase any existing limits for amounts below Rs. 50,000 beyond that figure.

Unfortunately, many of the banks have not so far fully complied with the directive. But for this the credit squeeze might have by now produced more tangible results.

Other measures taken by Government to discourage rise in prices have been as follows :—

(a) *Issue of foodgrains from Government Stocks* through a large number of fair price shops which has been made possible by a fairly large import programme, at present over 29,000 fair price shops are functioning in the country.

To enable supply of foodgrains at reasonable prices to the consumers through fair price shops and to build up gradually reserve stocks, the Government of India have entered into two long-term agreements :

- (a) With Burma for import of 2 million tons of rice over a period of 5 years commencing from 1956 ; and
- (b) With U. S. A. for import of 3.1 million tons of wheat and 1.9 lakh tons of rice over a period of 3 years again commencing from 1956, under PL 480.

Under the terms of agreements with the U. S. A. Government of India have to continue normal imports from other countries. Government of India are, therefore, making purchases, of wheat from Australia with their own funds.

Some purchases of rice have also been made from Viet-Nam and from USSR out of their purchases in Burma.

- (b) *Amendment of the Essential Commodities Act* empowering the Government to requisition the stocks of foodgrains at the average of the prices prevailing during three months preceding the date of issue of notification ;

After the Act was amended, a notification was issued on 6th June 1957 applying the amended provisions of the Act to the entire country excluding Jammu and Kashmir and Kerala States, so far as rice and paddy were concerned.

On 29th July 1957, the amended provisions of the Act were applied in respect of grain to Rajasthan, Punjab, and 15 gram producing districts of U. P.

The issue of these notifications has in a way frozen the level of prices of rice and grain in areas where the amended provisions of the Act have been applied. Requisitioning is now actually going on in Andhra in respect of rice and in Sri Ganganagar district of Rajasthan in respect of gram.

- (c) *Formation of Wheat Zones.* The following three Wheat Zones were created with effect from the 13th June 1957.

First Zone : Punjab, Himachal Pradesh and Delhi.

Second Zone : Uttar Pradesh.

Third Zone : Rajasthan, Madhya Pradesh and Bombay (excluding the city of Bombay.)

Wheat cannot now be imported into or exported from these Wheat Zones.

Prior to the creation of the Zones wheat used to be exported in substantial quantities from the wheat producing areas, soon after the harvest and during the lean period the Government had to send stocks of imported wheat from port towns to meet shortage in these areas. The creation of the Zones has, on the one hand, eliminated these cross movements and, on the other, has helped in stabilising the prices of wheat in these areas. Immediately after the creation of these Zones, the prices of wheat particularly in Punjab and Madhya Pradesh decline substantially—in Punjab up to Rs. 2 per maund and in Madhya Pradesh up to about Re. 1 to Re. 1/8 per maund.

- (d) *Formation of Southern Rice Zone.* The Southern Rice Zone comprising the four states of Andhra Pradesh, Madras, Mysore and Kerala was formed with effect from 9th July 1957, while Andhra is highly surplus, Kerala is equally deficit. At the time of the formation of this Zone it was estimated that Andhra had a surplus of about 6 lakh tons, while the deficit of the other three States for the rest of the year was about 4 lakh tons as follows :

Kerala	2.5	lakh tons
Madras	1.0	„
Mysore	0.5	„

CHAPTER 30

PLANNING IN AGRICULTURE

Agriculture under First Plan

The primary object of the First Five Year Plan 1951 was to restore the levels of income and consumption in the country to those prevalent on the eve of World War II. There were, besides, a few immediate issues which confronted the country and demanded urgent attention. For instance, consequent on the partition and the effects of World War II the country was faced with a serious food deficit and shortage of some of the basic agricultural raw materials. So that within the broad frame-work of policy, the Plan had to devote special attention to increasing the production of foodgrains and a few important cash crops such as cotton, jute, sugarcane and oilseeds. Some inconsistency did arise between the two conflicting aims, as extension of cultivation of these two sets of crops demanded a judicious allocation of agricultural lands. The land reforms and other measures aiming at agricultural reorganisation in general were expected to play a significant role in bringing about conditions of higher and better production in agriculture, but they should be regarded as long-term measures and, therefore, their full effects would be spread over more than one Plan period. Thus the First Five Year Plan laid special emphasis on agricultural development. The First Five Year Plan envisaged the following increases in agricultural production¹ :

Commodity	Unit	Production in the base year	Targets of additional production	Percentage increase
Foodgrains	m. tons	54.0	7.6	14
Major oilseeds	"	5.1	0.4	8
Sugarcane (gur)	"	5.6	0.7	13
Cotton	m bales	2.9	1.3	45
Jute	"	3.3	2.1	64

It was proposed in the plan to increase the production of foodgrains from 54 million tons to 61.6 million tons; of oilseeds from 5.08 million tons to 5.48 million tons; of cotton from 2.91 million bales to 4.2 million bales; of jute from 3.3 million bales to 5.4 million bales and of sugarcane from 5.6 million tons to 6.3 million tons during the plan period. For this purpose about 16 per cent of the expenditure in the Plan was earmarked

¹ *Second Five Year Plan, 1956, p. 255.*

for agriculture and Community Development Projects and another 17 per cent for multipurpose irrigation projects. The following table shows the targets of expenditure on different items of the plan during the First and the Second Five Year Plan period¹:

Distribution of Plan Outlay by Major Heads of Development

	First Five Year		Second Five Year	
	Plan		Plan	
Agriculture and Community Development	357	15.1	568	11.8
Irrigation and Power	661	28.1	913	19.0
Industry and Mining	179	7.6	890	18.5
Transport and Communications	557	23.6	1,358	28.9
Social Services	533	22.6	945	19.7
Miscellaneous	69	3.0	99	2.1
Total	2,356	100.0	4,800	100.0

In order to achieve the programme of higher agricultural production, stress was laid primarily on improved tillage, *viz.*, adoption of better cultivation methods, use of more fertilisers and improved seeds and a more plentiful and assured supply of water. A special campaign was started to propagate intensive cultivation of rice by the Japanese method of paddy cultivation. Campaigns were also organised for the development of intensive cultivation methods in case of crops like sugarcane. Apart from the technological improvements, attention was also paid under the First Five Year Plan to the adoption of measures which would improve the psychology of the cultivator, give him an incentive and determination to improve his agricultural techniques and efficiency. These took the form of reform of land tenures and tenancy systems, organisation of co-operative action and development of suitable links between the cultivators on the one hand and sources of supply, research centres and marketing organisations, on the other. Provision was also made for the improvements in other related spheres like marketing, fisheries, animal husbandry, soil conservation and forestry.

Achievements of the First Plan

The success achieved during the First Five Year Plan exceeds our expectations. The following table shows the course of agricultural production during the First Plan period²:

¹ *Our Second Five Year Plan*, Oct., 1956, pp. 14-16.

² *Second Five Year Plan*, 1956, pp. 256. *Agricultural Statistics of Reorganised States*, 1956, p. 68-71.

Commodity	Unit	1951-52	1953-54	1954-55	1955-56
Cereals	m. tons	42.9	58.3	55.3	53.3
Pulses	„	8.3	10.4	10.5	10.1
Total Foodgrains	„	51.2	68.4	65.8	63.4
Major Oilseeds	„	4.9	5.3	5.9	5.5
Sugarcane	„	6.1	4.4	5.5	5.8
Cotton	m. bales	3.1	3.9	4.3	3.9
Jute	...	4.7	3.1	2.9	4.1

The Index Number of agricultural production increased from 95.6 in 1950-51 to 103 in 1952-53. It further rose to 114.3 in 1953-54 and touched the peak level of 116.4 in 1954-55. In 1955-56, the Index Number receded to 113.7 but even then it was 19% above the 1950-51 level. The targets of production set out in the First Five Year Plan were exceeded in the case of foodgrains and oilseeds in 1953-54; while in the case of cotton, the target was exceeded in 1954-55. In the case of jute and sugarcane, production had gone down in 1952-53 and 1953-54 but there was a remarkable recovery in their production in 1954-55 and 1955-56. Sugar production reached the record figure of 15.9 lakh tons in 1954-55 but 1955-56 we manufactured 18.7 lakh tons which is 75% above the average in previous years.

Agricultural production showed distinct improvement over the Plan period. The output of foodgrains in 1955-56 at 64.8 million tons was nearly 11 million tons above the production level of 1949-50. The turning point came in 1953-54 with a peak production of 68.8 million tons of foodgrains. This was followed by another good crop in 1954-55 when the foodgrains output was 66.8 million tons. However, that the food production targets of 7.6 million tons represented not an estimate of actual production, but of increase in the production potential on account of the completion of various programmes in the plan, such as major and minor irrigation works, improved seeds, reclamation and others. In this sense the achievement fell short of 6 million tons.

Apart from this, about 10 million acres of land have been brought under irrigation from minor irrigation works and 6.3 million acres (as against 8.5 million acres) under large and medium irrigation works. The area actually irrigated was a little over 4 million acres. About 6,000 tube-wells were constructed during the First Plan period. Capacity for power generation

was increased from 2·3 million Kws. to 3·4 million Kws. More than one million acres of land had been reclaimed through the Central Tractor Organisation. The total cropped area increased from 326 million acres before the Plan to 352 million acres in 1954-55. The area under food crops has risen from 252 million acres to 271 million acres and the area under commercial crops from 49 million acres to about 60 million acres. Besides, over 5 million acres have been developed through developmental measures, including mechanical cultivation, bunding, levelling and reclamation of land by manual labour. The area under Japanese method of cultivation increased from 4 lakh acres in 1952-53 to 13 lakh acres in 1953-54 and further to 21 lakh acres in 1955-56. The gain in the production of paddy recorded from this method is as much as 17·3 maunds of paddy or 11·56 maunds of rice per acre. A substantial saving occurred in foreign exchange as a result of our reduced dependence on imports of foodgrains and cotton. The foodgrain imports came down from 4·7 million tons valued at Rs. 217 crores in 1951 to 0·7 million tons costing Rs. 33 crores in 1955. Likewise, the imports of long-staple cotton has declined from 12·3 lakh bales in 1950-51 valued at Rs. 10·1 crores to about 7 lakh bales valued at 6 crores.

The more important factors which have contributed to an increase in the production of agricultural produce may be summarised as below :—

(i) The increase in the gross cropped area (from 330·1 million acres in 1951-52 to about 352·4 million acres in 1954-55).

(ii) The addition to the gross irrigated area (from 56·5 million acres in 1951-52 to 60·7 million acres in 1954-55).

(iii) Generally favourable weather conditions in 3 out of 5 years.

(iv) The increase in the use of inorganic and organic manures (the consumption of fertilizers increased from 305,000 tons in 1951-52 to 652,000 tons in 1954-55).

(v) The wider propagation of improved methods of cultivation like the Japanese method of rice cultivation.

(vi) The wider propagation of better-yielding crop-strains.

(vii) The increase in the use of tractors and improved ploughs for better tillage.

(viii) The increase in the use of insecticides and pesticides.

(ix) The increase in the area under owner cultivation.

(x) The standing threat of a ceiling on landholdings along with the prospect, held out, of exemption of efficiently cultivated farms from such ceiling.

"While the general trend of food production would appear to be upward," it must be admitted says the Review of the First Plan, "that favourable seasons have played a notable part and there are substantial elements of instability despite the evidence of the growth of agricultural production during the First Plan."

By the end of the First Plan, the community projects and national extension service programme had been taken up in about 140,000 villages situated in 988 development blocks and was serving a population of 77.5 million persons. As against a provision of Rs. 90 crores in the First Plan, the total expenditure incurred was about Rs. 46 crores.

The total disbursement of loans during the Plan period amounted to only Rs. 40 crores, as against a provision of Rs. 135 crores of co-operative credit.

As a result of various schemes carried out by the State Governments, green cover has been restored on over 75,000 acres, matchwood plantations have been raised at the rate of 3,000 acres per year, over 3,000 miles of forest roads have been constructed and an area of over 20 lakh acres of forest land under private ownership has been brought under the State control during the First Plan period.

In regard to soil conservation schemes, besides the establishment of a desert afforestation research station at Jodhpur in 1952 and 5 regional research-cum-training centres in the later half of the Plan period, pilot projects were taken up in 11 States. Soil conservation measures were demonstrated in the pilot projects areas as well as many other places such as the Damodar Valley, the Machkund area, the Bundelkhand region, the Jamuna ravines in U. P. Keleghai and Darjeling in West Bengal and Nilgiris in Madras. Soil conservation measures have been adopted on a total area of 7 lakh acres of which Bombay alone accounts for two-thirds.

During the First Plan period, 600 key villages 150 artificial insemination centres and 22 *gosadans* for 8,000 cattle were established.

Agriculture under Plan Second Plan

The Second Five Year Plan (published in May, 1956) provided for higher targets of production in view of the increasing demand for food and raw materials on account of our growing population and expanding industries. Tentatively the targets of additional production were kept at 10 million tons for foodgrains; 1.3 million bales for cotton; 1.5 million tons for oilseeds; 1 million bales for jute and 1.3 million tons for sugarcane in terms of gur. But later on these targets were revised. The revised targets and tentative targets of production in the Plan are given below :—

Commodity	Unit	Estimated Production 1955-56 (as given in the Plan)	Tentative targets of production (as given in the Plan)	Revised Target of production	Per cent increase in index of production (as in the Plan)	Per cent increase in index of production (as revised in the Plan)
Foodgrains	m. tons	65.0	75.0	80.5	16	24
Oilseeds	"	5.5	7.0	7.6	27	38
Sugarcane	"	5.8	7.1	7.8	22	35
Cotton	m. Bales	4.2	5.5	6.5	31	55
Jute	"	4.0	5.0	5.5	25	38
Coconut (oil)	lakh tons	1.3	2.1	2.1	63	62
Areca nut	lakh mds	22.0	27.0	27.0	23	23
Lac	"	12.0	16.0	16.0	33	33
Black paper	000 tons	26.0	32.0	36.0	23	37
Cashewnut	"	60.0	80.0	106.0	33	77
Tea	m. lbs.	544.0	700.0	700.0	18	18
All Commodities	..	...	..	...	17	27

It may be observed that the revised target of foodgrains production comes to 15.5 m. tons or an increase of 24 per cent over the estimated production for 1955-56. The production of oil-seeds, sugarcane, cotton and jute are expected to go up by 38, 35, 55 and 38 respectively whole agricultural production as a whole represent an overall increase of 27 per cent as against 17 per cent originally contemplated.

The higher production is to be achieved largely through improved techniques and propagation of intensive cultivation. But unlike the First Plan, in which emphasis was primarily laid on crop production, the Second Plan aims at a diversified agricultural economy as it includes development of livestock and rural uplift measures side by side with increased crop production. In the programme for improved techniques and the spread of intensive cultivation, important items are—better irrigation facilities, greater use of manures and fertilisers; more widespread distribution of good seeds; and extension of the Japanese method of paddy cultivation.

Irrigation and Power

The Plan provides Rs. 913 crores for the irrigation and power sector, *i.e.*, 19% of the total outlay. The Plan envisages the construction of 204 major and medium irrigation schemes costing on completion nearly Rs. 410 crores, of which Rs. 172 crores will be spent during the Second Plan Period. Including a spill-over of Rs. 209 crores on schemes continuing from the First Plan to the Second Plan, the total expenditure on irrigation schemes during the Second Plan will be of the order of Rs. 381 crores. Eleven of the 204 schemes will cost Rs. 10 crores each; seven between Rs. 5 and 10 crores; 37 between Rs. 1 and Rs. 5 crores and 149 crores less than Rs. 1 crores.

The irrigation potential of the new schemes is about 14.8 million acres, of which 3 million acres will be brought under irrigation during the Second Plan period itself, and the rest in the third and subsequent period. With the 9 million acres which will be brought under irrigation through minor schemes and 12 million acres through the continuing First Plan Projects, the total irrigated area in the country will be 88.8 million acres by 1961, about 73% more than the area at the commencement of the First Plan. The percentage of irrigated area to sown area in the country will increase from 22.6% at the end of the First Plan to about 30% at the end of Second Plan.

The contributions of irrigable area from the more important irrigation projects of the Second Plan are :—

<i>Bombay</i> : Ukai, 614,000 acres ; Khadakavasla, 204,000 acres ; Narbada, 1,157,000 acres.	<i>Andhra</i> : Vamashdharay, 306,000 acres. <i>W. Bengal</i> : Kangsbati, 250,000 acres. <i>Saurashtra</i> : Bhadar, 90,000 acres.
<i>M. P.</i> : Tawa, 590,000 acres. Purna, 157,000 acres.	<i>Kerala</i> : Boothathankettu, 63,000 acres.

During the Second Plan the installed capacity of electrical undertakings is to be raised from 3.4 million kws. to 6.9 million kws., i.e., over a 100% increase in the capacity at the end of the First Plan. The additional production will be achieved in both public and the private undertakings, and in hydro and thermal power plants. Of the new 44 new power projects, 10 will cost over Rs. 10 crores each, 4 between Rs. 5 and 10 crores; 18 between Rs. 1 and 5 crores; and 12 less than Rs. 1 crores. 25 are hydro-electric schemes, yielding about 2.2 million kw., and 19 thermal stations yielding 1.3 million kw.

The major continuing schemes are : Tungbhadra, Hirakud (Stage I) Damodar Valley Corporation, Chambal (Stage I), Koyna, Periyar, Umtru (Stage I) and Rihand. Among the new schemes included in the plan are Tawa, 30,000 kw. ; 10,000 kw. ; Chambal, State II, 19,000 kw. ; Umtru Stage II, 5,000 kw. ; Durgapur Thermal Station, 150,000 kw. ; Bhadram 33,000 kw. ; Kundah, 180,000 Matatilla Hydel Scheme, 15,000 kw. ; and Sharvati, 142,000 kw.

About 10,000 more villages will receive electric supply, bringing the total number of village benefited by electric supply to 16,500 as against 3,700 at the beginning of the First Plan. The per capita consumption of electrical energy is expected to rise to 50 units in 1961 as against 25 units in 1955-56, *i.e.*, an increase of 100 per cent.

Of the 1,356 million acre-feet of annual water supply from rivers, hardly 76 million acre-feet were tapped for irrigation before the First Plan. Another 190 million acre-feet will be utilised by the irrigation schemes undertaken in the First and Second Five Year Plans on their full development. About 390 million acre-feet are expected to be utilised on some 130 million acres of cultivable area which can be brought under irrigation in the third and subsequent plans.

Fertilizers

Consumption of nitrogenous fertilisers is to be raised from 6 lakh tons to 18 lakh tons. Special attention will be given to green manuring practices and the utilisation of sewage, compost and

other manures. The consumption of potash has been fixed at 30,000 tons. The Standing Committee of Experts on Manures and Fertilisers has strongly recommended for the manufacture of diammonia phosphate for trial production at the Sindri Fertiliser Factory at the rate of 30,000 to 40,000 tons a year.

Seeds

To saturate the country with improved seeds, a comprehensive seed multiplication and distribution scheme has been drawn up by which one seed farm of 25 acres will be located in each development block. More than 4,280 seed farms will be established spread over an area of 93,000 acres by the end of the Plan.

Plant protection work is also to be intensified. Soil conservation work in concerted manner over 3 million acres of land will be undertaken in areas which are at present seriously affected by soil erosion. Such measures will be carried out on agricultural lands, ravine lands, waste lands and in important river-valley and hilly regions, through the control of shifting of sand dunes, afforestation, fire control and contour bunding.

Extension of Cultivated Area

Among schemes for increasing the area under cultivation, there are bold programmes for the reclamation of land soil conservation. About 1.15 million acres of land will be reclaimed and an improvement programme will be undertaken over an area of 2 million acres through the Central and State Tractor Organisations, individual cultivators and other agencies.

Under the Second Plan, soil conservation work will be continued at a cost of Rs. 20 crores and will cover about 31 lakh acres comprising agricultural lands (20 lakh acres), desert and coastal dunes (3.5 lakh acres), river valley projects (3.3 lakh acres), hill regions (1.7 acres), ravine lands (1.5 lakh acres), waste lands (1 lakh acres) and lands eroded by sea.

Diversified Agricultural Economy

The Second Plan aims at a diversified agricultural economy by simultaneous development of animal husbandry, dairying, forestry, fisheries, poultry farming and co-operation.

The key-village scheme for scientific breeding, feeding, disease control and management of cattle which was started in the First Five Year Plan is to be extended under the Second Plan. It is proposed to set up 1258 key villages, 245 artificial insemination centres, 254 extension centres and 1,900 veterinary dispensaries to improve the breed and health of cattle. The programme aims at producing about 22,000 improved stud bulls, 9.5 lakh improved

bullocks and about 10 lakh improved cows. The Plan aims at an increase of about 40 per cent in milk output over a period of 10 to 12 years in intensively worked area. To improve the milk supply in urban areas cattle colonies and co-operative milk supply unions are also going to be established. Rural creameries and milk-drying plants are also to be set up in surplus rural pockets of the country. The Plan aims at establishment of 36 urban milk supply schemes, 12 co-operative credit societies and 7 milk drying plants. To encourage the breed of high milk yielding animals, several pedigree breeding stations will also be set up.

Forestry

Under forestry the programme includes :

(i) the rehabilitation of about 380,000 acres of "deforested lands which have come under State control ;

(ii) plantations along canal banks and roadsides and village waste lands ;

(iii) plantations of commercially important species on 50,000 acres of forest land, of wattle and blue gum on about 13,000 acres and of medicinal plants on about 2,000 acres ;

(iv) matchwood plantations on about 50,000 acres ;

(v) construction or improvement of 7,400 miles of forest roads ;

(vi) the establishment of timber treating and seasoning plants ; and

(vii) the survey of forest resources.

Horticulture

The State Plans envisage the rejuvenation of about 200,000 acres of existing orchards and the establishment of new ones on 200,000 acres. The production and preservation of fruits and vegetables will be encouraged by establishing seed and plant nurseries, developing the canning industry and by setting up cold storage plants. Measures will also be undertaken for the multiplication of potato seeds and for increasing the export of preserved food and vegetable products.

Fisheries

As the existing per capita consumption of fish in India is only 3.9 lbs. per annum, it is proposed to increase the present fish production of about 11 lakh tons, through the increased use of mechanical devices, improved methods of fishing, improved type of raft and provision of ice and cold storages.

Co-operation

In view of the importance of co-operation as a means of organising rural economic life, the co-operative movement is being

reorganised. An integrated programme of co-operative development, covering all important aspects of economic activities, *viz.*, credit, marketing, processing and warehousing and storage has been formulated under the Second Plan. The target for short-term, medium and long-term credit has been fixed at Rs. 150 crores, Rs. 50 crores and Rs. 25 crores respectively as against Rs. 30 crores, Rs. 10 crores and Rs. 3 crores respectively under the First Plan.

A National Co-operative Development and Warehousing Board has been set up. A Central Warehousing Corporation and 16 State Warehousing Corporations are to be established. Warehouses and godowns with a storage capacity of 2 million tons are to be set up which would make it possible for agriculturists to store a sizeable part of their marketable surplus of agricultural commodities. Further, the number of regulated markets is to be doubled by the end of the Second Plan. Schemes for compulsory grading of produce before export will be extended to such commodities like wool, bristles, goat hair, lac, sheep and goats' skins, East Indian tanned leather, cashew nuts, pepper and ginger, oilseeds, oils, essential oils and kapok.

Agricultural Education

The total requirements of agricultural graduates is estimated at 6,500 in the country as against the output of 5,500. For the training of village level workers, the training facilities are to be expanded by opening 25 new basic agricultural schools, 21 extension centres and 16 basic agricultural wings, in addition to 54 basic agricultural schools and 44 extension centres, already existing.

Institutional Changes

Besides technological improvements in agriculture, the Second Plan lays much emphasis on institutional changes which aim at promoting land use and land management on more efficient lines and ensuring a greater degree of social justice among those dependent on land. During the Second Plan particular attention will be devoted to questions relating to imposition of ceilings on holdings, consolidation of fragmented plots, land management practices and co-operative farming. The measures designed to reduce disparities in wealth income and to achieve social justice will be adopted with due regard to the requirements of agricultural efficiency.

The progress achieved in the agricultural sector under the First Plan has strengthened the base of our economy and has let down the foundations for a much bolder programme of development not only in agriculture but also in other sectors. Although under the Second Plan, there is an inevitable shift in priorities with the larger accent on industrialisation the success of the Plan still primarily depends on the progress in the agricultural sector.

Difficulties in Agricultural Planning

There are great hurdles in making agricultural planning a complete success in India. These difficulties may be enumerated as follows :

Firstly, the Indian peasant, whose willing and active co-operation is needed for making the plan effective, is usually conservative and takes a traditional view of the things and is not prepared to adopt new ways. "Participation of the people in framing and fulfilling programmes and targets constitutes the crux of development in the field of agriculture and for the promotion of social welfare. From every aspect agricultural development turns upon the extent to which the people take up programmes with enthusiasm and are willing to work for them."

Hence, in order to take benefit of the active co-operation of the peasant it is necessary that (i) he should be convinced of the soundness of the plan and of the fact that it is in his interest and advantage ; (ii) confidence should be inspired in him by producing quick results which he can see and realise ; and (iii) the man in the street should be convinced of the honesty and efficiency of the officials in charge of enforcing the plan. The Planning Commission has rightly observed : "If at the level at which the citizen meets the administration, he encounters corruption, delay and inefficiency and if he finds no sign of effective steps against the anti-social elements who exploit the community and benefit themselves at its expense, it will become difficult to evoke enthusiasm and active support from the people."

Secondly, the success of agricultural planning depends on the efficiency and honesty of officials and the efficacy of the organisation set up to execute the plan. As the Planning Commission points out, "the pace of development will depend largely upon the quality of public administration, the efficacy with which it works and the co-operation which it evokes." There is paucity of trained, efficient and honest officials to man the plan. Unfortunately cases have come to light when the officials concerned have made only paper entries and instead of passing seeds, manure and money to the cultivator, have pocketed them themselves. This short circuits any effort at planning and also destroys the common man's faith in it.

Hence, in order to remove these defects and to select better types of persons for manning the various projects under the plan, the Planning Commission have suggested these measures :—

(i) "Some machinery should be devised in order to enquire into cases of alleged misconduct on the part of persons who hold any office, political or other. Where there is a *prima facie* case for an enquiry, such an enquiry should be held in order to find out and establish facts ;"

(ii) "The existing law provides for cases in which a public servant may be found to have come into possession of pecuniary resources of income which he cannot account for satisfactorily. It does not provide for those cases in which a public servant's near relations may have been found to have become suddenly rich. We suggest that the possibility of removing this lacuna should be studied and necessary legislation undertaken ;" and

(iii) "An official who does not have a reputation for honesty should not be placed in a position in which there is considerable scope for discretion."

Thirdly, agricultural planning is hampered by the peculiar character of Indian rural life. There is a lack of suitable roads, irrigation and other facilities. These must be provided in the rural areas without delay if the plan is to be made effective and fruitful.

Conclusion

In order to overcome the difficulties inherent in the agricultural economy, the State must intervene and accept the responsibility for inducing changes through positive programmes. These programmes, providing for a dynamic element of social uplift, should aim at an appreciable increase in the physical output per acre of land, less input per unit of product, and a higher yield per unit of labour. The programmes should take several forms, especially the following :

(1) The creation of social capital, through extension of irrigation and power, the reclamation of virgin or barren lands, the improvement in and expansion of the means of transport,

(2) the organisation and wider application of agricultural research and scientific farming,

(3) the provision for improved technology, plant breeding, improvement of livestock, weed and pest control,

(4) the distribution of improved seeds, fertilisers, implements and manures should be speeded up. The programme for establishing state seed farms for raising nucleus seeds and multiplying these through registered growers for wider spread through sale or exchange should be implemented on a priority basis,

(5) the encouragement of farm-mechanisation through State tractorisation services as in the U. K., and now in West Bengal and Bhopal, or on a co-operative basis as in the Scandinavian countries,

(6) an adequate provision of rural credit should be made. Agricultural credit should be linked with production programmes worked out on a village and family basis,

(7) the organisation of warehousing, grading of farm produce and agricultural marketing,

(8) education and health services in rural areas, uplift of the backward classes and assistance to the under-privileged sections of the rural communities,

(9) agricultural extension service to promote self-help and mutual co-operation and to guide or spread the knowledge of better farming techniques, and

(10) afforestation and soil conservation.

It is the rate of investment in social capital and the promotion or expansion of scientific farming that can engender the speed of technological change in agriculture so as to provide full employment in farm occupations, to diversify the rural economy and to rationalise the input-output ratios in production.

Agricultural Progress in First Year of the Second Plan

(Agricultural production in 1956-57 has shown a substantial increase over that in 1955-56.) The over-all index of agricultural production during 1956-57 was 123.0 (base 1949-50-100) as compared to 115.9 in 1955-56. This represents an increase of 6.1 per cent in 1956-57 as compared to 1955-56. The agricultural targets under the Second Five Year Plan envisage an increase of about 27% in five years or 5.4% per annum. The increase actually achieved in the first year is, thus, higher than the *pro-rata* annual increase envisaged under the plan.

(Taking foodgrains alone, the production in 1956-57 has been 68.6 million tons as compared to 64.9 million tons in 1955-56—an increase of 3.7 million tons or roughly 5.67 over the previous year. The Plan envisages an increase of 28.8 per cent in five years or about 4.8% each year. The actual increase in 1956-57, thus, exceeds the *pro-rata* annual rate planned.)

(Production of rice went up from 26.8 million tons in 1955-56 to 28.1 million tons in 1956-57, showing an increase of about 4.8 per cent. Similarly, the production of wheat increased from 8.6 million tons in 1955-56 to 9.1 million tons in 1956-57—an increase of roughly 5.8 per cent.) Both wheat and rice showed record yields, exceeding the previous peaks, attained in 1953-54 for rice and in 1954-55 for wheat. The other cereals recorded an increase of about a million tons as compared to the previous year. (There was a fall in the production of bajra which has been more than compensated for by increases in jowar and maize. The production of ragi and small millets showed increases only of a small order.) Gram recorded an impressive increase of about 11 per cent from 5.3 million tons in 1955-56 to 5.9 per cent million tons in 1956-57.

In regard to commercial crops, the position is somewhat better. Production of oilseeds was 5.89 million tons as against 5.66 million tons in 1955-56; production of cotton is estimated at 48 lakh bales; production of sugarcane (gur) estimated at 6.3 million tons shows an increase of 0.4 million tons over the level of 1955-56 and the output of jute is 42.21 lakh bales as compared to 41.97 lakh bales in 1955-56.

During 1955-56 sanctions were given for the establishment of 475 seeds farms of 25 acres each 14.5 lakh acres were brought under the Japanese method of paddy cultivation by the end of 1956 against a target of 20 lakh acres for 1956-57; 6.75 lakh tons of ammonium sulphate and 1 lakh tons of super-phosphate were expected to be utilised in 1956 as compared to 5 lakh tons and 78,000 tons respectively in 1955; and land reclamation operations were carried out by the C. T. O. over an area of 87,000 acres of *kans* and jungle land.

A provision was made for 500 N. E. S. Blocks in 1956-57, of which the programme was started in 495 N. E. S. Blocks covering 49,600 villages and a population of 32.7 million. In addition 250 Community Development Blocks were converted from N. E. S. Blocks, covering 35,752 villages and a population of 18.8 million.

An additional area of about 1.5 million acres is estimated to have been irrigated in 1956-57 from large and medium works and 1.6 million acres from minor irrigation works. About 90 large and medium projects were expected to be completed during the year, 2,650 tube wells were completed. Against a target of 308,500 kw. for 1956-57, the installed capacity for generation of power was increased by about 260,000 kw. thus raising the total installed capacity to 3.66 million kw. at the end of 1956-57.

BOOK FOUR

MISCELLANEOUS RURAL PROBLEMS

30. Rural Unemployment.
31. Cottage and Small-scale Industries.
32. Rural Transport.
33. Rural Reconstruction.
34. Village Panchayats.
35. District Boards.

CHAPTER 31

RURAL UNEMPLOYMENT

There are 357 million people in India. Of these 295 million live in the rural area, *i.e.*, nearly five out of every six Indians live in the rural area. Besides, the rural sector makes vital contribution to the annual national income. About half the net national product is contributed by agriculture, animal husbandry, forestry and fishery, as is revealed by the following table¹ :—

National Income

(At 1952-53 Prices)

(In crores of Rupees)

Year	Agriculture	Fishery, Forestry & Animal Husbandry	Total Agriculture	Mining	Factory Establishments & Small Enterprises	Commerce Transport & Communication	Other Services	Total
1950-51	3,732 (41.0)	718 (7.9)	4,450 (48.9)	80 (0.9)	1,590 (17.5)	1,650 (18.1)	1,420 (15.6)	9,110 (100.0)
1955-56	4,437 (41.1)	793 (7.3)	5,230 (48.4)	95 (0.9)	1,995 (18.5)	1,875 (17.4)	1,700 (15.7)	10,800 (100.0)

It will be interesting to know that agriculture in India contributes the largest share of our domestic product in comparison to some other countries, as will be seen from the following table² :—

Percentage Share of Agriculture in Net Domestic Product

Country	% Share	Country	% Share
Argentina (1952)	19.0	Netherlands (1954)	12.7
Brazil (1952)	33.9	New Zealand (1952)	27.2
Canada (1954)	8.7	Norway (1954)	13.9
Denmark (1954)	19.3	Pakistan (1952)	59.9
W. Germany (1954)	10.9	Turkey (1953)	52.4
India (1953)	50.9	S. Africa (1953)	16.9
Italy (1954)	24.6	U. K. (1953)	5.1
Japan (1954)	22.1	U. S. A. (1954)	5.5
Indonesia (1952)	56.4		

1 *Eastern Economist*, Annual Number, 1956, p. 572.

Ibid., p. 988.

It will be clear from the above figures that village is not only the pivot of Indian economy but it also provides the broad-based foundation of national economic system. The urban sector directly depends on the prosperity of the village. The major problem of rural sector is the unemployment and underemployment of the rural population. The Congress Working Committee in a Resolution, in May 1953, have rightly observed :

“The major test of the success of any plan is the measure in which one deals with the problem of unemployment. In a Welfare State, there should be practically no unemployment and opportunities for work should be available to all those who desire it.” After all, the greatest asset of the country is its man-power. Many of those who are employed or partially employed exhibit a low level of skill thus leading to economic loss.

Statistics published by the All India Khadi and Village Industries Board disclose a dangerous trend in the employment situation in the country. Some of the statistics are reproduced below¹ :—

Number and Percentage—Workers and Non-Working Dependents

Year	Workers		Non-Working Dependents	
	Total	%	Total	%
1901	103,393,798	50.1	103,261,453	49.9
1911	125,546,689	49.6	127,792,722	50.4
1921	122,668,900	48.6	129,422,270	51.4
1931	129,699,063	47.0	146,541,147	53.0
1951	142,337,038	39.9	214,291,274	60.1

Variation in the Proportion of Workers in Agricultural Sector

Year	Males		Females		Persons	
	Total	%	Total	%	Total	%
1901	...	...	...	...	64,450,763	31.2
1911	57,461,728	22.7	29,735,466	11.8	87,197,194	34.5
1921	54,542,856	21.6	29,342,289	11.6	83,885,145	33.2
1931	55,517,482	20.1	25,211,599	9.1	80,729,081	29.2
1951	68,993,989	19.3	33,124,272	9.3	102,118,261	28.6

Variation in the Proportion of Workers in the Non-Agricultural Sector

Year	Males		Females		Persons	
	Total	%	Total	%	Total	%
1901	...	...	...	...	39,143,035	18.9
1911	25,318,455	10.0	13,031,040	5.1	38,349,495	15.1
1921	26,712,073	10.6	12,071,682	4.8	38,783,755	15.4
1931	29,582,595	10.7	19,387,387	7.1	48,969,982	17.8
1951	31,599,572	8.9	8,619,205	2.4	40,218,777	11.3

¹ *Planning For Full Employment*, 1954, pp. 130—131.

From these tables following important conclusions could be drawn :—

1. The percentage of workers is progressively falling while the percentage of non-working dependents is progressively increasing.

2. The proportion of workers in the agricultural and non-agricultural sectors is falling.

In other words the employment situation in the country is progressively worsening.

Period of Inactivity or Seasonal Unemployment

The seasonal character of the agricultural operations has resulted in an uneven distribution of labour power. This waste of labour is due specially to the enforced unemployment which lasts on an average from 150-270 days in a year. Since agriculture in Northern India does not denote mixed farming familiar to England and consisting of harvesting and disposal of two crops, viz., Kharif and Rabi in the year, the net wastage of labour approximates 200 days or 60% of his working time which results in a tremendous waste of income.

The period of complete inactivity in each agricultural region varies with the nature and variety of crops and cropping. Broadly speaking, Indian cultivator is unoccupied anywhere from four to six months in a year excepting in places where he has undertaken the cultivation of the wet crops or where he grows more than one crop from the same soil in a year, and the cultivators' womenfolk are unoccupied for even longer part of the year.

This period of agricultural unemployment or under-employment varies from one part of the country to the other. Various estimates have been made regarding this period of unemployment by different investigators, some of which are given below :

(1) According to Professors P. J. Thomas and K. C. Ramkrishnan five months of leisure "as a general rule, single crop-cultivators and double crop-cultivators have little or no work on the field for three months in the year at a stretch."¹

(2) The Bengal Land Revenue Commission observed that "On an average the Madras cultivator sits idle for six months in the year. The position is the same in Bengal, and even is worse in districts where practically no crops are grown except *aman* paddy. In those districts the cultivators find employment only for three or four months in the year."²

(3) Mr. Jack estimated 9 months' idleness for jute growers and 7½ months for rice growers.³

1 P. J. Thomas and K. C. Ramkrishnan *South, Indian Villages : A Survey*.

2 *Report of the Bengal Land Revenue Commission*, p. 91.

3 Jack, *Economic Life of Bengal District*, p. 38-39.

(4) According to Dr. Mukerjee, the peasant in Northern India outside the more intensively cultivated areas is occupied for not more than 200 days. Of Oudh he says that if the cultivator sows 2 acres with early rice followed by peas, and half an acre with cane by working alone he would have sufficient to occupy him for 250 days in the year. If he sowed *kodon* and *arhar* rotating with barley, he would have 150 days work on an average.¹

(5) In the submontane districts of U. P., (Gonda, Bahraich, Gorakhpur) the cultivators have 110 days' full labour and 188 days' complete leisure.²

(6) Dr. Slater has computed taking South India as a whole that the cultivators are occupied only for 5/12 of the possible working time.³

(7) According to Keatinge, there are only 180 to 190 days working days in the Bombay Deccan.⁴

(8) Calvert in the Punjab found that the work done by an average cultivator is not more than 150 days' full labour whereas Bhalla found in Hoshiarpur that the cultivator works for 278 days only, taking a normal day of ten hours.⁵

(9) The number of days when agricultural labour is not able to find work may be estimated as ranging between 120 and 200 days. The Protector of the Depressed Classes estimates 200 days in a year as the maximum number of days of work of agricultural labourers in a holding.⁶

Let us analyse the employment situation as it exists in the rural areas : ⁷

Livelihood Pattern in Rural Sector

Livelihood	Male	Female (In Lakhs)	Total	% of the total rural population
1. Self-supporting	706	151	857	29.41
2. Non-earning Dependents	674	1065	1739	59.00
3. Earning Depen- dents	119	232	351	11.91
Total	1499	1448	2947	

¹ Mukerjee, *Rural Economy of India*.

² Lorenzo, *Agricultural Labour & Market Gardening in Oudh*, p. 144.

³ G. S. Slater, *Some South Indian Villages*.

⁴ Keatinge, *Rural Economy of Bombay Deccan*.

⁵ *Board of Economic Enquiry Punjab Publication No. 1 & II*

⁶ Cochin Govt., (1949) p. 341.

⁷ *Census of India*, 1951, Vol. I. Pt. I. A., p. 90.92.

It will be seen that out of a total population of 2,917 lakhs in the rural sector, only 857 (*i.e.*, 29.41 %) lakhs are self-supporting. They not only support themselves but also support 1739 lakh non-earning dependents and provide partial maintenance to the earning dependents—351 lakhs. This shows that 29.41% have not only to earn for themselves but are also burdened with the remaining 71% of the total rural population. The pressure of dependent consumers on the efforts of the producers is more than apparent. The number of women (151 lakhs) is definitely low in the category of self-supporting people; while it rises in the categories of non-earning dependents and earning dependents—1065 and 232 lakhs respectively. The following table throws more light on the composition of category of self-supporting people :—

ANALYSIS OF SELF-SUPPORTING POPULATION (In lakhs)

Category of Livelihood	Males	Females	Total
Agriculturists	566	121	687
Non-Agriculturists	140	30	170
Total	706	151	847

Disguised unemployment or under-employment is most severe in the agricultural sector and more than 71 million agricultural labourers remain idle for 2 to 6 months in a year. The table below shows the extent of seasonal unemployment for 1951¹ :

	No. in millions	Duration of Seasonal Unemployment per Annum	Total Seasonal Unemployment per Annum (in Million)
Cultivators	51.5	4 months	18.17
Cultivating Labourers	14.9	6 months	7.45
Total	69.4		25.62

Dr. Nag says that on a conservative estimate the cultivators of land (wholly or mainly owned) remain unemployed for 1½ months in a year; while cultivators of land (wholly and mainly unowned) go without work for 2 months in a year; cultivating labourers are the worst victims of unemployment² who are without

1 A. I. C. C. *Economic Review*, August 15, 1955, p. 61.

2 D. S. Nag, *Unemployment in Rural Sector*, A. I. C. C. *Economic Review*, April 1, 1955, p. 6.

work for 3½ months and according to the Agricultural Labour Enquiry Committee, their position is as follows :¹

Employment on wages	218 lakhs
Self-Employment	419 „
Unemployment	98 „
Total	365 lakhs

This shows that the extent of self-employment was limited, and the incidence of unemployment depends largely and in an inverse ratio upon the scope of wage-paid employment which again was limited. During 10 days of self-employment it is doubtful whether many of them occupy themselves gainfully. The picture of unemployment even among the so-called self-supporting population will be as follows :²

Livelihood Class (Self-supporting)	Basis of Calculating days of Unemployment	Total Population (Lakhs)	Estimated No. of Unemployed Persons (Lakhs)
(1) <i>Agricultural Classes :</i>			
1. Cultivators of Land (wholly or mainly owned)	Unemployed for 1½ months in a year	457	57
2. Cultivators of Land (wholly or mainly unowned)	Unemployed for 2 months in a year	88	15
3. Cultivating Labourers	Unemployed for 3½ months in a year	149	45
Total		694	117
(2) <i>Non-Agricultural Classes :</i>	Unemployed for 3 months in a year	170	42
Grand Total		864	159

Out of 694 lakhs of agriculturists falling under the first three classes, 117 lakhs are unemployed or 936 lakh man-hours (8 hrs. per day) are spent in idleness by 117 lakh persons. Among the non-agriculturists, about 42 lakhs remain unemployed, or 336 lakh man-hours are wasted in unemployment by them. Further on the assumption that the mass of the rural population remains unemployed for 2 to 3 months in a year, the earning dependents (numbering 351 lakhs) left to themselves cannot support themselves,

¹ *Report of the Agriculture Labour Enquiry Committee*, p. 15.

² D. S. Nag, *Op. Cit.*, p. 16.

it can be inferred that they do not work for more than 4 months in a year, the number of such unemployed can be estimated at 234 lakhs—giving a grand total of 393 lakhs of unemployed persons in the rural sector.

It is interesting to note that the burden of unemployment is less severe in Plantations and Mining. The total unemployment position for this sector is illustrated in the following table :¹

(1)	(2)	(3)	(4)
	No. of Persons Unemployed	No. of Persons Employed	(Column 4 as Percentage of Column 3
Plantations	60,000	10,60,000	5.7
Mining	15,000	5,91,861	2.5
Total	75,000	16,51,861	4.5

Unemployment in cottage and small-scale industries tends to grow with increase in total population, as in the agricultural sector. Roughly there are about 2.33 million unemployed persons of the total of 7.0 million workers and artisans. Unemployment in these industries is due to non-availability of raw materials, poverty and inability of the artisan in securing raw materials, arranging credit, and his marketing his produce, lack of transport facilities and power.

Organisation of Temporary Work

Among the measures suggested to minimise the effects of unemployment crisis may particularly be mentioned the organisation of temporary work to maintain those thrown out of work until the crisis passes, *e.g.*, in Finland, relief works are established in the vast State forests and the marshy grounds and the Public Works Programmes are completed only at such times. The French, Swiss and Italian Governments encourage home-work in the country and have developed important cottage industries by the aid of seasonal agricultural labourers. There is a great scope in India to utilise the surplus labour power for the extension of afforestation and in arid areas extension of the scheme of canal construction, land reclamation and expansion of cottage industries.

Establishment of Regular Employment Agencies

It is further proposed to establish regular public and State unemployment agencies in the over-populated areas, and to create agricultural labour exchange with a view to facilitating the emigration of workers from areas over-supplied with workers to those under-supplied. They will not only transfer labour power

¹ M. L. Gupta, *Problems of Unemployment in India*, 1955

from one agricultural region to another, but will maintain a seasonal balance of labour supply in agriculture and industry. The Employment Service of Canada and the Agricultural Labour Exchanges of Australia have successfully combated rural exodus and maintained a seasonal balance of labour supply in forestry and agriculture. Such Labour Exchange and Employment Agencies in India shall render free service to persons in search of employment and shall be controlled and managed by a special Committee selected from the village Panchayats, and remain under the direct supervision of the Rural Labour Inspector. Village Labour Exchanges shall function under the District and Provincial Employment Exchanges. The Provincial Exchanges shall be controlled by the Rural Labour Commissioner.

Modification in the Laws of Inheritance

The enforced idleness and chronic under-employment of labour power is due to uneconomic holdings. The burden of a disproportionate amount of semi-idle labour not only lowers the efficiency of agriculture but reduces the workers to the verge of starvation. It is necessary to check the repeated partition and scattered distribution of holdings by modifying the Laws of Inheritance. In Europe and Russia Anti-Partition Legislation has been tremendously successful. In India attempts have been made to readjust small holdings by voluntary exchanges through the Co-operative Societies but have met with little success. In the absence of compulsion one or two cultivators have held up indefinitely the consolidation of holdings of a village. Therefore, only drastic changes in the Laws of Inheritance and Tenancy Laws and Land Policies can do some good. As a tentative measure legislation should be introduced along the following lines :—

1. Cultivators cultivating one-third of the cultivated area of the village should be given the power to apply for the consolidation of the village. In Prussia and Japan the scheme is forced on the basis of a bare majority on the rest, while in Austria and Switzerland this is done, if approved, by two-thirds of the cultivators representing more than half the land.

2. In the beginning consolidation should be made only of whole villages. In the case of scattered mahals, consolidation only of the holdings of the mahal would be possible provided the tenants do not cultivate holdings in other mahals.

3. The reconstituted holdings should be an economic holding not less than three acres of land of average fertility. It should be held by the 'preferred heir' of the family as family property, or he should compensate the other heirs. An '*economic holding*' should be considered impartible and exempt from seizure for debt.

4. Consolidation is a highly technical matter and requires a trained staff if it is to be done on a large scale. A consolidation officer should be appointed to a district, or the power of a consolidation officer should be given to an Assistant Collector, who will receive application from cultivator and proceed with consolidation if he finds that the request is *bona fide* and unobjectionable.

5. Some limit must be laid down to cost of consolidation per acre, Government bearing the excess cost, if any, and no application for consolidation should be entertained when a village is under partition or *vice versa*.

Any scheme of consolidation and redistribution of holdings should accompany the complete reorganisation of agriculture and the development of large-scale industries and cottage workshops. This will facilitate the shifting of surplus population set free as a result of reconstitution of holdings, from agriculture to industrial and mining centres, and maintain an equilibrium between the rural and urban areas.

Emigration

Relief for surplus labour is found in emigration. Emigration to the forests, industrial or mining centres of the country would give them a greater staying power and offer an expanding field of domestic service and miscellaneous employment. The development of transport facilities and the linking up of remote rural areas with industrial centres will considerably facilitate the distribution of labour power during the periods of seasonal unemployment. In Belgium, the established custom is that the peasant family deposes one of its members in an annual rotation to undertake either industrial labour in the city or field work on another peasant's farm. Transfer of agricultural labour power between distant places of work is common in Netherlands, while workmen's trains and bicycles are used commonly in Denmark and Norway. In Finland during the winter, when agricultural work decreases, the unemployed agricultural workers migrate to forest regions on account of the excellent transport facilities provided by the State. In India the absence of such facilities as are afforded in foreign countries, results in the stagnation of surplus labour power and the hired hands have to stay at home with the small comfort of a single meal, thin gruel and loin cloth in a prosperous year and starvation in years of scarcity.

It is necessary, therefore, that some sort of emigration should take place in India from the thickly populated parts to the thinly populated parts, where large acres of waste lands are available for cultivation but not taken up and abandoned. These can be brought under the plough through the measures of land reclamation, agricultural engineering and irrigation, and planned migration for

agricultural colonization. New townships should be developed in sparsely populated parts by providing all available facilities to the colonists.

Industrialization as a Means of relieving Rural Unemployment

As early as 1880 and 1901 pointed attention was drawn to the existence of huge number of people in excess of what was necessary for cultivation of land by the Famine Enquiry Commission Reports¹ and the development of the industries as one of the ways of decreasing demographic pressure on land was suggested. The Royal Commission on Agriculture also remarked, "If a marked reduction of pressure on land is required, it must be achieved by a definite diversion of the surplus labour of the country to industrial centres."² On the recommendations of the Famine Commission of 1905 a Department of Commerce and Industries was formed at the Centre. Since the Industrial Revolution and especially in the first quarter of the 20th century rapid industrialisation took place in different countries of Europe and Japan to raise the standard of living of the people and to relieve excess population from farmland. During the Post-depression period also remarkable rise in the industrial employment took place. Taking 100 as the volume of employment in 1932, the index figure of employment in industry had risen within six years to 200 in Germany, 180 in Estonia, 161 in Holland, 153 in Hungary, 151 in Denmark, 142 in Italy, 141 in Finland, 137 in Norway and 117 in Poland. For the whole of Europe (excluding Russia) the index had gone up to 140 by 1938. It is because of this industrial development that the percentage of people engaged in agriculture shows a decline in many European countries.³ In this light the potentialities of India's advancement are not fully exploited. If 100 is taken as the index number of industrial employment, (being the average for 5 years 1909-1913) after a period of 19 years it rose by 85 points, the index number of industrial employment in 1937 being 185. By 1941, only the smallest beginnings had been made in the development of the metallurgical, heavy chemical, ship-building, electrical and general engineering industries for which India possessed all the necessary raw materials, and nothing had been done to eliminate the twin bottlenecks of lack of machinery and a shortage of skilled labour which crippled India's efforts towards industrial expansion.⁴ Whatever industries were developed were of the consumer goods.

1 Quoted in the *Report of the Industrial Commission*, p. 58.

2 *Report of the Royal Commission on Agriculture in India*, p. 564.

3 Nanawati and Anjaria, *Indian Rural Problems*, p. 359.

4 Kate Mitchel, *India's Economic Potential*, in *Pacific Affairs*, March 1942, p. 23.

"The modern industrial enterprise in India has been upon comparatively restricted lines and there has been little enterprise in new directions. In fact the industrial development has not been commensurate with the size of the country, its population and its natural resources."¹

The following table gives the index number of Industrial Production in India during and after the Second World War period :

INDEX OF INDUSTRIAL PRODUCTION²

1937 = 100

Year	General Index	Year	General Index
1938	105.4	1943	117.0
1939	102.7	1944	117.0
1940	109.9	1945	120.0
1941	117.8	1946	109.0
1942	111.2		

INDEX OF INDUSTRIAL PRODUCTION³

1946 = 100

Period	General Index	Period	General Index
1947	97.2	1951	117.2
1948	108.4	1952	128.9
1949	105.7	1953	135.3
1950	105.0	1954	146.3

The number of workers employed in large-scale industries from decade to decade are given in following table :⁴

NUMBER OF WORKERS IN LARGE-SCALE INDUSTRIES (In Lakhs)

Year	Mines	Factories	Plantations	Railways	Total
1901	0.88	4.77	6.38	3.70	15.66
1911	3.07	7.90	7.41	5.43	23.12
1921	3.55	12.30	10.02	7.49	31.19
1931	3.45	15.20	10.80	7.77	35.81
1941	3.47	21.56	11.35	7.57	43.95
1951	5.49	25.36	12.52	9.35	52.72

From these statistics it would be clear that the industries which have been established or developed since 1901 have provided employment to only 215 millions. This does not, of course

1 *Industrial Commission Report*, p. 51.

2 *Fiscal Commission Report*, (1949-50), Vol. I, p. 21.

3 *Record and Statistics—Quarterly Bulletin of Eastern Economist*, Vol. 7, No. 1 (1955), p. 15.

4 *Indian Labour Year Book*, (1951-52), p. 2, 11, 14, 16.

mean that industrialisation has nothing to offer towards the solution of rural unemployment problem. On the contrary, it is only rapid industrialisation which by creating more capital and pumping a part of it into agriculture, creating markets for agricultural products, expanding secondary aid, what is more important, tertiary sources of employment, can ultimately reduce the pressure on land, increase the national income and make increased investment in and higher productivity of agriculture possible. In fact for an underdeveloped country like India, industrialisation has a very important role to play as a catalytic agent for the improvement of agriculture. But, in order to achieve all these, the industrial development in the country will have to be planned in such a manner that there may develop an organic relation between the farm and the factory and, wherever feasible, technically and economically, a decentralisation of all such industries as may be located in conveniently small units on a cottage or a village co-operative basis near the sources of raw material, should be desirable.

It is, therefore, essential that in India a proper correlation should be established between agriculture, small 'agro-industries' and large-scale industries so that each would supplement and to some extent fit in with the other. While according its full approval to the proposed pattern of investment in the Plan-frame of the Second Five Year Plan, the Planning Commission's Panel of Economists make the following interesting observation : "Agriculture will for long remain the most important economic activity of our people, and without an adequate supply of food and raw materials there can be no economic development. But there is no denying the fact that the First Plan has laid a solid base for the development of agriculture, and while a part of the large increase that has taken place in agricultural production is due to favourable weather, a part is certainly due to the creation of better facilities for agricultural production—but the very development of agriculture beyond a certain stage requires the development of non-agricultural activities, specially of industry not only for providing markets for the increased agricultural produce but also for providing the supplies of industrial consumer goods which alone can provide incentive for increased agricultural production . . . The economy needs both agricultural base and industrial base ; these are not in conflict but are really complementary, and beyond a certain initial stage of development, the growth of one conditions and facilitates the growth of the other."¹

Unless there is a parallel development in large-scale basic industries—like plant and machine industry, heavy chemicals, engineering, and scientific instruments, ships, aircrafts and iron

1 *Memorandum, Panel of Economists—Planning Commission.*

and steel industry, besides a good number of other commodities for which India has to rely on foreign countries—small-scale, agro-industries and agriculture so that each sector generates the purchasing power which would help absorb the increased production of the other sector there is bound to be introduced an element of economic instability which it would be very difficult for a big country like India to solve. In fact, India will have to look largely to herself for solving her problems of unemployment and markets. She cannot like 19th century England, send out her surplus population to foreign countries because of various restrictions imposed by the receiving countries against Indian emigrants, and because she has got no Colonies, where her surplus population can find shelter. Again, if she were to depend on the development of large-scale industries for export markets as Japan has done, she will not be simply able to find, under the present world conditions, the market for the very large industrial output which this will require. In India, the problem is not merely one of finding employment for her population and of producing more, it is also important that she should herself be able to absorb most of her own production, agricultural as well as industrial. In spite of large area and population that India has, the internal demand and, therefore, the extent of the market are necessarily limited because of the low purchasing power of its masses. Not only that. Shorn of the monetary veil, internal exchange largely takes the form of exchange between marketable agricultural surplus and industrial products. The industries that find a ready market for their goods are, therefore, those which supply goods both for consumption and business operations to the farmer. These cover such a wide range of industries as cotton textiles, sugar, cement, bicycles, sewing machines, implements, farm machinery and fertilizers. Thus the lack of demand is one of the chief limiting factors of rapid industrialisation. But the demand or market may be extended by substantially raising the level of living of the existing population. To quote a study of Latin America, "A policy of high wages and rising standards of living is thus the recipe of economic growth . . . Rising standards of living among the members of a stationary population, coupled with greater per capita productivity, thus can be substituted for population growth, both in providing markets for a growing manufacturing industry and maintaining sufficient labour for it."¹ No generalization can be made as to which is the better method. Much will depend on the social attitudes and the economic structure of the country.

In order to develop the country economically and to make the people rich it is necessary to increase the rate of national

1 George Soule, David Efron and Norman T. Ness, *Latin America in the Future World*, 1945, p. 316.

savings in India and to increase the rate of investment of these savings in industry, agriculture and development projects.

The programme of providing employment to a large number of people employed on land today, cannot succeed, unless *pari passu*, new employment opportunities are created in the non-agricultural sector. In other words, economic growth of India necessitates a broad-basing of its economies, through diversification of economic activities. This means that agricultural reorganisation will have to be integrally related to a wider and comprehensive plan of rapid economic development implying a shift of "emphasis from primary production in the sense of the direct exploitation of natural resources, to industrial production."¹ Besides, to lay a sound foundation for a rapid and sustained economic growth, it is further necessary to emphasise the development of heavy and basic industries, precisely because, from the long-term point of view, it is urgent to make a rapid advance in those sectors, where the potentialities for further growth and the direct benefits are the greatest.

What Industries should be developed ?

As majority of the people reside in the countryside emphasis must be laid on the rapid growth of small and cottage industries as a measure of relieving the pressure on land. The development of "Agro-industries" is the most vital step towards this direction. By 'Agro-industry' we mean "factory located to the farm and both managed in organic relation to one another."² A programme of combined development of agriculture and rural industry will lead to integration of labour and establish "a really balanced and wholesome national economy."³ The main purpose of agro-industry should be to process farm products and work in association with large holders of land and co-operative farm and societies. The Famine Enquiry Commission remarked, "Such a combined development would result in an increase in the productivity of land, an improvement in the supply of cattle feed and oil for human consumption and an expansion in the volume of non-agricultural employment in rural areas."⁴ The important farm products which can be processed in the rural areas and which can be developed into agro-industry are the rice and flour milling, sugar processing, cotton ginning, spinning and weaving, paddy husking, gur making, poultry rearing, firing and manufacture of tea, preparation of cream and butter, fruit canning and preservation, preparation of *achar*, *murabba*, jam and pickles, milk condensation and powder making, tobacco curing, basket and paper making,

1 D. R. Gadgil, *Economic Development of India in India Quarterly*—April-June, 1952.

2 *The Final Report of the Famine Enquiry Commission*, p. 307.

3 S. N. Agarwal, *The Gandhian Plan*, p. 60.

4 *Ibid.*, p. 307.

bee-keeping, soap making and oil crushing. Such small-scale industries when they come to be established, will provide the most necessary link between agriculture and large-scale industries and will narrow down the gap between rural and urban incomes and living conditions by reducing the unduly high pressure on land and by providing other sources of income to the rural population.¹

The rural industries would create a further demand for capital goods like machine tools, and motors for partly manufactured goods like yarn, steel strips, non-ferrous metals, leather, rubber, glass, etc. The income derived from these would further enlarge the consumers' market for large-scale industries producing consumption goods such as sugar, cement, shoes, textiles and steel girders, etc. Describing the experiences of rural industrialisation in Europe Dr. Mukerjee writes, "Rural industrialisation in a number of countries in Europe has brought about such an intimate relationship between agriculture and industry that it is at times difficult to draw the line between the spheres of the two. Industry helps in the handling of produce, supplies the firm with fertilizers and feeding stuff, machinery and other subsidiary materials. On the other hand, agriculture supplies industry with some of its raw materials. Dairies, milk condensation and powder factories, factories for the preparation of organic therapeutic products, the edible oil industry, milling, canning, chocolate and tobacco industries, are all the outcome of correlation between agriculture and industry in Europe."²

A number of small industries which are within the scope of every cultivator and are likely to stabilize agriculture without any specialisation are given below :—

1. Industries Suitable for Wet Moist Regions

These regions lie at the foot of the Himalayas and the Western Ghats and enjoy a very heavy rainfall. Most of them are riverine tracts, partly covered with forests, which yield valuable woods, bamboos, herbs, and grasses of commercial importance. Therefore, the most paying industries which can be developed on scientific lines are fishing, toddy drawing, basket weaving, rope making, mat and mattings, weaving of palm leaves or bamboo mats and fans, and grass cutting, *moonda* and cane chair making, sawing and furniture making, etc. Fruit farming is also profitable if fruits such as bananas, lemons, papayas, mangoes, jack fruits are grown.

2. Industries Suitable for Dry and Arid Regions

The dry regions of Central Ganges Jumuna Doab, western districts of U. P., Eastern Rajasthan, Madhya Pradesh and Deccan,

1 T. R. Sharma, *Location of Industries in India*, p. 277.

2 R. K. Mukerjee, *Man and His Habitation*, p. 15.

which are not so wet as Tarai or the Western Ghats can best be devoted to flower-gardening and perfume manufacturing, lac culture, *pan* cultivation, tanning, manufacture of fat and manure from dead animals, bone crushing, horn work, glue and gutt, making of lac bangles and toys and poultry farming. If marketing facilities are available, almost all districts near hill stations and the suburbs of big towns can grow into fowl-breeding centres and provide employment to a large number of agricultural labourers.

3. Industries Suitable for Regions in the Vicinity of Cities

It should be the privilege of all surrounding districts of an urban or industrial centre to specialize their land for market gardening and fruit culture. Though vast areas of fertile land exist around our towns, market-gardening on a commercial scale has not yet been developed. There is an insatiable and growing demand for all kinds of fruits and vegetables in urban centres, and a plot devoted to market-gardening will not only occupy the labourer's time for the whole year, but will yield him a high income such as may not otherwise be possible. It has been found that an acre under vegetables is worth six to eight times the value of an acre under wheat, and the fact that the cultivation of heavy-yielding crops minimises the evils of small holdings and gives employment to the whole family during the period of inactivity, is sufficient proof of its importance.

4. Seasonal Industries

The seasonal character of the agricultural operations has resulted in an uneven distribution of labour power. It is, therefore, necessary that such rural industries should be introduced as would adjust the seasonal feasting and fasting of the cultivators. There are particularly two periods when agricultural labour is completely out of work, *i.e.*, from middle of April to the middle of July (*Asarhi*) when the crop is growing. At present the summer period of idleness is completely wasted, while during the later period there is wholesale migration from villages to the industrial areas and mining centres. The only way of checking this pendulous labour force and of stabilizing agriculture is by introducing seasonal industries which will not only absorb the surplus labour but will serve to increase the purchasing power of the rural masses.

During the summer when the outdoor work of any kind is difficult, and even indoor work requires much physical exertion, simple industries like rope-making and basket-making, cane-work *tat*, *newar* and carpet making can be easily taken up. After rabi sowing there is a favourable season for collecting honey, toddy-drawing, ghee making, bangles and toy making and cocoon rearing.

There are then the industries which require a short-term training and specialisation, *e g.*, wood carving and inlaying, brassware and metal work, dyeing and calico-printing, carpet weaving, paper and soap making, button making and musical instruments making, toilet-requisites making, lock and cutlery and leather curing work, and shoe making, etc. There is an unlimited field for the development of indigenous industries, and with a little initiative and assistance the idle and under-employed agricultural worker can find permanent employment and earn a comparatively large and stable income.

With a new orientation and co-ordination between agriculture and industry on the one hand and the village and the city on the other, the establishment of a similar harmony of interests between the rural and urban areas in India is not difficult of achievement, so that the "science and technique of the city will utilise the resources and raw material and replenish the wealth of the village more than it will exhaust and its life will stimulate the minds and enlarge the vision of a far greater number of people than it will warp or repress".

COTTAGE AND SMALL SCALE INDUSTRIES

Importance of Rural Industries

Agricultural countries all over the world are generally poor, and the severity of poverty can only be offset when cultivators are men of skill and capable of adjusting their labour to seasonal changes in their occupation. In a predominantly agricultural economy, it is subsidiary occupation that keeps the rural population intact and the agricultural wealth developing. At the root of much of the poverty of Indian people lies the unfortunate circumstance that agriculture forms almost the sole occupation of the mass of the population, and that no remedy for present evils can be complete which does not include the introduction of a diversity of occupations through which the surplus population may be drawn from agricultural pursuits and led to find the means of subsistence in manufactures or some such employments.¹ Dr. Pillai observes that subtracting the land utilized for supplying foreign markets from the total area under cultivation, we shall find that what is left over does not represent more than two-thirds of an acre per head of the total Indian population.² With this man-land ratio India cannot survive long in these days of break-neck competition and hard livelihood. The obvious remedy for this economic maladjustment is to seek other outlets for this surplus population, and the cry for rural industrialization is a natural outcome of this imperious economic necessity.

The problem of adjusting the rural population to available resources and determining an efficient economic man-land ratio, has been felt equally by all countries of the world. But France, Germany, Italy, Japan and Switzerland have made remarkable progress in this matter. France leads all the countries of Europe where sericulture, silviculture and vine-culture are the cultivator's chief subsidiary occupations. These industries yield very high returns, and therefore, the peasantry is far better off than elsewhere. In Italy and Holland dairy keeping and toy-making, lace and embroidery works are commonly handled. Dairy and poultry farming, fruit culture and cattle-rearing are the chief occupations of North American farmers. In Japan and China cocoon-rearing is the chief spare-time industry employing more than a million families. Poultry farming is another favourite subsidiary industry of Japanese farmers engaging more than four million families. In France and

1 *Famine Commission Report*, Vol. I, P. 175.

2 Pillai, *Economic Condition in India*.

Germany sericulture and toy-making play a similar part. In Switzerland watch and instrument making is a by-occupation of a large number of the people. It is well to remember in this context that in Japan, over 80% of the total establishments employ less than 30 workers each and that in spite of her striking advance in industrialisation, Japan still remains a country of cottage industries and small workshops. Here fully one-third of the population is engaged in cottage industries. In Belgium too, 90% of the establishments employ less than 5 employees. Even in England, the employment of workers in their own homes or in workshop under small masters still survives. Charles Booth gives us a vivid description of the conditions under which industries like tailoring and shoe making at White Chapel and silk-weaving at Bethnal Green are carried on. Cutlery in Sheffield, lace-making and hosiery in Nottinghamshire, straw plating in Bedford, glove making at Worcester, are all small-scale industries still carried on in the midst of the factory-ridden environment. The Indian Fiscal Commission draws our attention in this connection thus, "It is the relative strength of modernised cottage and small-scale industries that accounts for the larger place these latter have always occupied in the economy of even such industrially advanced countries of the world as U. S. A., the U. K., Germany, and Japan . . . There are about 3,900,000 industrial establishments in U. S. A. with 1 to 4 workers. A recent estimate is that small establishments make up 92.5% of U.S. business establishments, employ 45% of the country's workers, and handle 34% of its volume of business. In U. K. according to an official estimate, units employing between 5 and 30 persons accounted for 29% of the employment and 19% of the output." Now this problem has grown intense due to economic transition in India, and the betterment of the rural masses depends to a very large extent upon the development of such resources as will ameliorate the low economic condition of the people.

Need for the development of rural industries in India

The arguments for the development of rural industries ancillary to agriculture are obvious and many :—

Firstly, the existence of extreme fragmentation whether due to socio-economic or socio-political causes, has greatly diminished the income of the peasants. The agricultural profits from these undersized holdings are so small that the agricultural labourers cannot depend solely upon them, but have to move out to earn wages on others' fields or nearby towns. While the peasant cannot keep out of debt unless he is exceptionally industrious and frugal or has a 'second string to his bow.' This is not the case in India alone but in England too. "The English small holder," says Mr. Cutler, "without any by-industry has hitherto only been able to keep his head above water by a life which may be called one of incessant toil and frequent privations."

Secondly, the problem of over-population has become acute in many parts of India. As the pressure of population on the land increases the whole fabric of agricultural and rural life undergoes a change. There is often an attempt to meet this situation by extensive cultivation and multiple-cropping. Sometimes it also leads to a cityward drift or emigration to more distant regions, thus leading to the disintegration of the settled economic life of village communities. The expansion of cultivation and over-crowding in agriculture has resulted in the diminution of the size of holdings and thus pepper-pot distribution, which has caused a general lowering of the standard of living. Diversity of occupation, therefore, to accommodate the surplus and floating rural population, is the pressing need of India and this can be done by the opening of new supplementary occupations and trades. This will not only relieve the pressure of population but also bring about a large addition of income to the cultivators who stay at home.

Thirdly, there has been an all-round rise in the standard of living of the cultivators. During the past two or three decades the whole social and economic organization of village communities has undergone a pronounced transformation under the pressure of new forces of social and economic relativity. The chief feature of the modern villages in transition is their increasing dependence on outside markets owing to changes in the standard of living. The growing rural-urban relationship has opened new vistas of progress. With the increase of commercial agriculture the purchasing power of the cultivators has increased and their demands multiplied. This rise in the mode of living, if not backed by a substantially increased income, will be short-lived and highly detrimental to national prosperity. It has, therefore, become imperative to supplement the income of rural masses by the introduction of subsidiary industries.

Fourthly, a vast mass of people, especially those resident in the rural areas, are unable to procure a sufficiency of food, clothing, housing and other bare necessities of a healthy, efficient and decent living; and a large portion of them are in a state of constant want, semi-starvation, enforced idleness and economic insecurity. While other means of improving the economic conditions of the rural masses, such as improvement of agriculture, extension of irrigation and other means of extensive cultivation, vegetables and fruit growing, etc., provision of public utilities and social services in rural areas, such as medical and educational facilities, transport services, water supply, etc., and State programmes of providing roads, irrigation facilities and other forms of capital equipment, will, if vigorously pursued, lead to a considerable amelioration in rural conditions, these measures will, in the nature of things, take time to materialise. The revival and expansion of old and the introduction of new cottage and rural industries will be an important

and indispensable means of rehabilitating the villages and providing adequate and suitable employment to the people in the villages and ensuring to them a satisfactory level of income and resources.

Finally, the seasonal character of the agricultural operations has resulted in an uneven distribution of labour power. This waste of rural labour is due specially to the enforced employment which lasts on an average from 150-270 days in the year. Since agriculture in Northern India does not denote mixed farming familiar in England, and consists of harvesting and disposal of two crops (Kharif and Rabi) in the year, the net wastage of labour approximates 200 days or 60 per cent of his working time, which results in a tremendous loss of income. The period of complete inactivity in each agricultural region varies with the nature and variety of crops and croppings. Broadly speaking the Indian cultivator is unoccupied anywhere from four to six months in a year excepting in places where he has undertaken the cultivation of wet crops or where he grows more than one crop from the same soil in a year, and the cultivator's womenfolk are unoccupied for even a longer part of the year.

Thus it will be readily seen that there is a great wastage of rural labour in almost all parts of India. It is seldom that the idle labourers hire themselves out in the towns as milch hands or ordinary coolies, because, neither is there so instantaneous a demand nor do these labourers care to move about in such quest. It is, therefore, very necessary that rural cottage and small-scale industries should be developed to exploit the rural resources of the village and adjust the seasonal feasting and fasting of labourers. The Royal Commission on Agriculture emphasized the development of rural industries with the chief idea of utilizing the leisure periods of villagers providing them with new sources of earning. The Famine Inquiry Commission have also suggested for the development of 'agro-industries' in the rural areas with the help of cheap electric power. The U. P. Cottage Industries Sub-committee (1947) was definitely of opinion that "the only way to fight the monster of unemployment is the development of cottage and small-scale industries. . . the problem is to devise the best means of providing employment and occupation to the vast mass of rural population which is to remain idle during the off-season of agriculture."

The National Planning Committee observes, "The importance of cottage and small-scale industries for improving the economic life of the large masses of the rural people arises from various advantages which such industries enjoy. They are¹ :—

1 *National Planning Committee Report on Cottage Industries, 1948*

(i) employment in the rural setting of the worker's own place of habitation combined with numerous physical, moral, material and other benefits that go with such employment ;

(ii) finding means of livelihood for the largest number of persons ;

(iii) offering opportunities for profitable employment and development of inherent talent and aptitude in occupation which should be congenial to them ;

(iv) the opportunities of following more than one vocation for means of livelihood, particularly subsidiary occupations for the cultivating classes ;

(v) the comparatively lower cost of living for a similar standard in rural areas than in urban areas ;

(vi) the increased employment in rural areas leading to spreading over of purchasing power which is confined to urban areas at present.

According to the Planning Commission, "The primary object of developing small industries in rural areas is to extend work opportunities, raise incomes and standard of living and to bring about a more balanced and integrated rural economy. Inevitably, in rural areas, the traditional industries have to be given immediate consideration."¹

What are Cottage Industries and Small-scale Industries

The phrase 'cottage industry' has been defined by various authors and Committees differently. According to the U. P. Cottage Industries Report, "The term 'cottage industries' is used in contrast with the organised large-scale industries carried on in the mills and factories and includes subsidiary industry which absorbs only a part of the time of the worker."

Whereas the National Planning Committee agree to the following definition : "A small-scale or cottage industry is an enterprise or series of operations carried on by a workman skilled in the craft on his own responsibility, the finished product of which he markets himself. He works in his own house with his own tools and material and provides his own labour or at most labour of such members of his family as are liable to assist. The workers work mostly by hand labour and personal skill, with little or no aid from modern power-driven machinery and in accordance with traditional technique, and such supplementary energy as is provided by animal power may add to the economy and efficiency of the

¹ *Second Five Year Plan*, p. 429,

industry. He works finally for a market in the immediate neighbourhood, that is to say, in response to known demand with reference to quality as well as quantity."¹

According to the Fiscal Commission, 1949-50, the cottage industry is "one which is carried on wholly or primarily with the help of the members of the family, either as a whole or a part-time occupation."

While a small-scale industry is "one which is operated mainly with hired labour, usually with 10 to 50 hands and is not carried on in the cottage of the worker as the resources of the producer are limited. It includes all units or establishments having a capital investment of less than Rs. 5 lakhs."²

The Fiscal Commission observe that "while cottage industries are associated with agriculture and provide whole-time occupation only in rural areas, small-scale industries generally provide whole-time occupation to their workers and are located in urban or suburban areas. No definition, however, can avoid over-lapping and afford a clear line of demarcation between cottage and small-scale industries."

Chief Features of Cottage Industries

From the above definition it would be clear that the chief characteristics of cottage industries are :—

(i) Unlike the large-scale industries the cottage industry is not localised to any great extent. It is widespread all over the country. Different castes in India have taken up different industries and, therefore, the geographical distribution of cottage industries in India is generally according to the distribution of castes.

(ii) These industries are carried on by handicraftsmen or artisans in their own homes on their own risk and for their own benefit.

(iii) They are helped by the members of their family or they also employ a few apprentices or a couple of labourers may also be hired.

(iv) The amount of capital invested is usually small. This capital requirement ranges from a few tens of rupees to a thousand or so rupees. This capital is either supplied by the middlemen or even handicraftsmen from their meagre resources. Nevertheless taking these industries together it is an undoubted fact that several crores of rupees are invested in these industries.

¹ *National Planning Committee Report on Rural and Cottage Industries*,

² The Bombay Industrial and Economic Enquiry Committee defines "Small Scale industry as one where power is used and the number of workers employed is less than 50, and the capital invested is less than Rs. 30,000; while Cottage Industries according to this Committee are those industries where no power is used and manufacture is carried on in the home of the artisan."

(v) The necessary skill for carrying the crafts is handed down from father to son or from the master to the apprentice. They also acquire by experience a dexterity and delicacy of touch which in many cases is not surpassed by the artisans of any other country.

(vi) The raw material is usually available near at hand while the tools needed are very few and simple and in most cases are manufactured locally. It is often supplied by the consumer, the middlemen and purchased by the artisan himself.

(vii) The power needed is mostly hand power while power machinery is either not used or used on small scale with no division of labour.

(viii) The largest section of the cottage industry thrives on the local market.

(ix) The organisation of the industry is generally medieval, though efforts are now being made to recognise it on modern lines, especially with a view to offer better opportunities to more skilled or artistic cottage workers.

(x) The cottage worker usually combines agriculture with handicraft which he carries on only during his slack season or periods of leisure from the agricultural work to supplement his meagre and uncertain income as his secondary occupation.

The chief characteristics of the small-scale industries are¹ :—

- (i) They are localised in urban and semi-urban areas ;
- (ii) They use machines, power and modern technique ;
- (iii) They are run by small entrepreneurs or self-supporting workers and sometimes by co-operatives. They are usually operated with 10 to 50 hands.
- (iv) Their capital investment is less than Rs. 5 lakhs.

Classification of Cottage and Small-scale Industries

According to Dr. Mukerjee, the cottage and small-scale industries in India today can be divided into four classes :—

(i) Peasant arts and crafts carried on as subsidiary occupations by cultivators which supply their own household needs and which sometimes are intended for an extended market. Such industries are hand spinning and weaving ; flour-grinding, rice-pounding, basket-making, cane-work, rope-making, weaving of blankets and sericulture. There has been a certain amount of specialization

¹ *Second Five Year Plan*, pp. 450-51.

and localisation in regard to these occupations. Basket-weaving has been localised in Banaras and Allahabad districts; the abundance of palms in Malabar and Eastern Bengal has favoured skill in wicker-work and mat-making amongst the cultivators. Bamboo mats made in Assam are used in roofing country boats and jute godowns in Bengal. Silk-worms are reared and silk cloth woven in Assam, Bengal, Mysore and Kashmir. Handloom weaving is more important in Madras, Mysore, U. P. and Bengal.

(ii) *Industries which supply the needs of the village carried on by a specialised group of workers.* These industries are in the hands of industrialists who have nothing to do with agriculture. The village craftsmen include the blacksmith, the carpenter, potters, tanners and weavers, who supply the needs of the village and are still remunerated by shares of grain. Local carpenters make the ploughs, local blacksmiths their shears, local potters the utensils for cooking or for water, tiles, bricks, *kolhus*. These artisans now work with better raw materials and better tools. "The weaver has taken to mill yarn, the dyer to synthetic dyes, the brazier and copper-smith to sheet metal, the blacksmith to iron rolled into convenient sections, in each case with advantage to himself from the lessened cost of production which has greatly extended his market."¹

(iii) Village art industries carried on by artisans with specialised skill and aiming at a standard of art which appeals to a wider market. In Bengal, Kashmir, Mysore silk-industry had flourished. Carpet weaving is associated with Mirzapur and Banaras villages. Wood-work is common in Saharanpur and pottery in Chunar villages. Metal work is familiar in parts of Bihar and Bengal. Glass bangles are made in U. P. The manufacture of shawls in Kashmir and silken saris and *Pitambars* in Mysore have received world-wide reputation. Brass and copper wares are made in a number of Bengal and Madras villages.

(iv) Urban arts and crafts, representing superior craftsmanship, many of which still survive. Amongst these arts are included embroidery and brocade, gota and lace-making, gold plated threads, carpets and shawls, cotton and silk-weaving, conch shell making, etc.

What place should be assigned to different kinds of Industries ?

According to the Fiscal Commission, while assigning place to different industries in the materials economy, the following factors should be taken into consideration² :—

¹ *Report of the Indian Industrial Commission* p. 10 and 162.

² *Report of the Fiscal Commission, 1949-50*, p. 33.

- (1) the nature of the industry,
- (2) the technological character of the industry,
- (3) the relative proportion of capital and labour needed for the organisation of industry,
- (4) the extent to which decentralisation in production in small units is economical on the basis not only of its private cost but also of its social cost, and
- (5) the rate at which it is designed to effect a change in the occupational pattern.

(A) With regard to their nature, industries can be grouped into three categories :—

(a) Those in which large-scale production has certain definite advantages and which cannot be operated on a small scale, such as iron and steel, heavy chemicals, cement, mining, etc. They cannot be carried on on a cottage and small-scale basis and, therefore, there is no choice.

(b) Those in which small-scale and cottage industries have certain advantages such as the manufacturing of locks, padlocks, candles, buttons, *chappals* and badges and food industries. Some of them have lower costs of production when carried on on a small scale. In the case of food industries there is greater nutrition value when things are processed by hand.

(c) Industries which can be run economically both on large and small scales. The real problem of choice arises in the case of these industries.

(B) From the technological point of view industries may be classified into three groups¹ :—

(a) Those in which small-scale production has certain advantages and is not affected by large-scale industry to any great extent, such as bee-keeping, gur-making and certain handicrafts ;

(b) Those in which small and cottage industries are subsidiary to large-scale industries and are concerned either with the manufacturing of certain parts or with certain stages of production in a manufacturing process in which the predominant role is that of large-scale industries ; and

(c) Those in which the cottage and small-scale industries have to meet the competition of the corresponding large-scale industry, such as hand-loom cloth, *khandsari* sugar and leather goods.

There is no problem in the case of industries belonging to the first group while in the case of second group of industries a greater

co ordination between large and small-scale industries solves any problem that might arise. Real difficulty arises in the case of industries belonging to the third group.

If other things remain the same in the case of small-scale, cottage and large-scale industries, preference should be given to the type in which less capital and more labour is required. In this respect the cottage and small-scale industries satisfy this condition.

In comparing the cost of production of various kinds of industries not only expenses of production but also the social cost should be taken into consideration. The social cost is much less in the case of cottage and small-scale industries and they should be preferred if the difference between the manufacturing costs of large and these industries is not much.

The E. C. A. F. E. Working Party on small-scale industries (1953) suggested that (i) small-scale industries should not venture into production which is economically possible in large-scale factories, and (ii) small-scale industries should concentrate as far as possible on lines of production in which they have a natural advantage. This would make it possible to co-ordinate the working of small and large-scale production, which are not competitive but complementary to each other.

Cottage Industries in the Past

There is ample evidence to prove that Babylon traded with India in 3000 B. C. and the arts and crafts were in a high state of proficiency two thousand years ago. According to the Indian Industrial Commission, "At a time when the West of Europe, the birth-place of civilisation, was inhabited by uncivilised tribes, India was famous for the wealth of her rulers and the high artistic skill of her craftsmen. And even at a later period when the merchant adventurers from the West made their first appearance in India, the industrial development in this country was at any rate not inferior to that of more advanced European nations."¹

The fact that Egyptian mummies of two or three thousand years ago are found embalmed in Indian silk proves the high skill of the craftsmen in the past. In manufacture India attained the marvellous perfection at a very early period and the courts of Imperial Rome glittered with gold and silver brocades of Delhi. The muslins of Dacca were famous ages ago, throughout the civilized world. Textile fabrics of inimitable fineness, tapestry glittering with gold gems, rich embroideries and brocades, carpets wonderful for the most exquisite harmony of colours, enamels of

¹ *Indian Industrial Commission Report*, p. 1.

most brilliant hue, furniture most elaborately carved, swords of curious forms and excellent temper are among the objects that prove the perfection of art in India. In the words of William Hunter, "The industrial genius of her inhabitants, even more than her natural wealth and her extensive sea-boards, distinguished India from other Asiatic lands." Mr. Martin also rightly observes, "The gossamer muslins of Dacca, the beautiful shawls of Kashmir, and the brocaded silks of Delhi adorned the proudest beauties at the Court of Cacsars, when the barbarians of Britain were painted as savages. Embossed and filigree metals, elaborate carvings in ivory, ebony and sandalwood, brilliantly dyed chintzes, uniquely set pearls and precious stones, embroidered velvets and carpets, excellent porcelain and perfect naval architecture, were for ages the admiration of the civilized mankind, and before London was known in history, India was the richest trading country on earth."¹ But the table took a turn and Indian industries languished very soon.

Causes of the Decay of the Cottage Industries

At the beginning of the 19th century, they occupied a very favourable and important position in India's economic activity. In spite of this, we are confronted with the problem of a rapid decline both in the artistic excellence and the economic importance of these handicrafts, a decline which, though in some cases it began as early as the end of the 18th century became very marked about the middle of the 19th century.

The causes working towards this result were numerous. Most important of them were :

1. The Disappearance of the Native Courts

The disappearance of the native courts meant the cessation of the main source of demand for the products of these handicrafts. The abolition of the courts of *Nawabs* meant that the fine articles which were in demand by the nobles for the state occasions, were no longer in demand. Wherever the court was abolished, handicrafts and arts began to decline. The process was naturally not rapid in the beginning. Though the court disappeared the class of nobles remained ; the reputation of the place could not be destroyed suddenly and the manner of living of a whole class could not be changed at once. Thus the demand for luxury goods survived the disappearance of courts in most places, but this was a steadily diminishing demand. The younger generation was bought up unaware of the splendours of the old

¹ Quoted by P. N. Banerjee in *A Study of Indian Economics*, 1944, pp. 80-81.

darbars except by hearsay, and they had not the same inducement and means as of old to patronize the arts and the handicrafts.¹ Thus the silk manufactures of Bengal were prosperous because of the patronage of courts of the Mughals at Agra, Delhi, and Lahore, but when the Empire broke up they naturally began to decline. Similarly, Nawabs of Cudh indirectly fostered a flourishing dyeing industry at Lucknow by a prescription that the nobles should appear in different coloured clothes on different festivals. The decline in the Lucknow dyeing industry after 1856 was very rapid.

2. The Establishment of an Alien Rule

With the influx of many foreign influences that such a change in the nature of government meant the demand for the wares which the handicraftsmen produced could only come from the richer urban classes. But many of these richer classes were mostly land proprietors and having no attraction to remain in the towns had naturally retired to their estates. This resulted in the cessation of the demand for home-made goods. Further, the educated and the professional classes were influenced by the rulers and preferred imported machine-made cheap goods. Thus newly created Indian *bourgeoisie* class showed itself during the latter half of the 19th century extremely ready to accept European standards and to pour scorn on everything Indian. This was specially so in the case of the arts. To follow European fashion was considered the hall-mark of enlightenment. Consequently the products of the indigenous industries suffered. The disarming of the population further led to the decay of damascening and inlaying of arms, weapons and shields so that only ornamental knick-knack for European tourists and others were produced.²

The establishment of the British rule also indirectly weakened the power of the guilds and other bodies which regulated trade and saw to the quality of the materials used. In many places like Delhi and Lucknow the industry began rapidly to decay as soon as the supervisory bodies vanished and consequently there began an adulteration of materials.

3. Competition of the Machine-made Goods

The process of decay, begun by the establishment of foreign rule and helped on by the force of foreign influence, was completed by the competition of the foreign goods. This was specially the case in the matter of textiles; and the finer branches of this craft were very hard hit. England at that time was producing goods very cheaply and of the diverse designs too on account of the use of large-scale machinery, labour-saving devices, complex division

¹ D. R. Gadgil, *Industrial Evolution of India*, 1938, p. 38.

² *Ibid.*, p. 41.

of labour and the improved transport and communications, all of which causes were the aftermath of the Industrial Revolution in England. "The invention of the power-loom in Europe", as R. C. Dutt writes, "completed the decline of Indian industries." The shipbuilding industry of India followed suit and the Indian ships were displaced by the British mercantile marine, partly as a result of the adverse policy of the Court of Directors towards Indian shipping adopted in response to agitation in England. The same story may be recounted of other industries such as iron-smelting and glass and paper manufactures. The revolution in transport in India due to spread of the railways caused the rapid construction of transport lines in the remote interior so that imported goods could be easily sent to the remotest parts of the country and this fact intensified the force of competition. Roads, telegraphs, railways, the construction of the Suez Canal, the drop in steamer freights, especially after 1830, reduction of transport costs for the export of English manufactures, all these factors added to the difficulties and hastened the ruin of the Indian artisan.¹ The construction of the railways in India was too rapid to allow the artisans to adapt themselves to the new circumstances and find for themselves other profitable channels of employment. Being taken unawares and left to their own resources, they abandoned their traditional occupations in thousands in favour of agriculture, thus increasing the pressure on the land.

4. Policy of the East India Company and the British Government

At first the East India Company was helping the Indian industries by providing finance and other help but when the vested interests in England raised a cry of opposition, the Company, likewise changed its policy and now began to emphasise more on the export of raw materials rather than the products of Indian manufactures.² In the first half of the 18th century, England used the tariff against India with the double purpose of protecting her woollen and silk manufactures and of raising additional money to meet the cost of continental wars. As Mr. R. C. Dutt observes, "India in the 18th century was a great manufacturing as well as a great agricultural country, and the Indian handlooms supplied the markets of Asia and Europe. The East India Company and the British Parliament, following the selfish commercial policy of a hundred years ago, discouraged Indian manufactures in the early years of British rule in order to encourage the rising manufactures of England. Their fixed policy, pursued during the last decade of the 18th century and the first decades of

1 A. Chatterton, *Industrial Evolution in India*, p. 20.

2 Jathar & Beri, *Indian Economics*. Vol. I, p. 119.

19th century was to make India subservient to the industries of Great Britain and to make the Indian people grow raw produce only in order to supply raw materials for the looms and manufacturing of Great Britain. This policy was pursued with the unwavering resolution and fatal success. Orders were sent out to force Indian artisans to work in the Company's workshops; commercial residents were legally vested with extensive powers over villages and communities of Indian weavers; prohibitive tariffs excluded Indian silks and cotton goods from England; English goods were admitted in India free of duty or on payment of a nominal duty.¹ Duties ranging from 30 to 80 per cent and in some cases prohibition of Indian imports, could have not failed to injure Indian exports to England to some extent.'

The following table shows import duties in England on certain East Indian goods for home consumption as it obtained in 1803 :²—

Particulars	Import duty (on every £ 100 of the value)
Calicos	50
Cotton manufactures	52
Handkerchiefs	25
Muslin plain	20
Stocking of cotton	52
Cotton thread	52
All varieties of glass	70
Lacquered ware	50
Chemical oil	50
Coloured prints	50

The British intruder broke up the Indian handloom and destroyed the spinning-wheel. India no more remained a manufacturing country but became a consumer of British goods. Shri Nehru has said, "The current which was flowing from India bringing Indian goods to foreign countries, and bringing back gold and silver, was reversed. Henceforth, foreign goods came to India and gold and silver went out of it."³

The damping of Indian markets with British machine manufactures was more and more intensified along with increasing control over greater and greater tracts of Indian sub-continent and while everything was done to destroy Indian industries,

¹ R. C. Dutt, *Economic History of India under Early British Rule*, pp. 7-8.

² L. G. A. Knowles, *Economic Development of the Overseas Empire*, p. 310.

³ Quoted by H. L. Gupta, *Problems of Unemployment in India*, 1955.

⁴ J. L. Nehru, *Glimpses of World History*, p. 419.

fullest facilities were given for the imports of British goods in India. The following table shows the duties on imports of British goods in India in 1852¹ :—

Articles	Import duty (per cent <i>ad valorem</i>)
British Books	Free
Foreign Books	3 0
Coffee	7·5
British cotton and silk piecegoods	5·0
Foreign cotton and silk piecegoods	10·0
British cotton thread, twist and yarn	3·5
Foreign cotton thread, twist and yarn	7 0
Horses and other animals	Free
British metals	5·0
Foreign metals	10·0
British woollens	5·0
Foreign woollens	10·0

Marx had remarked that England "inundated the very another country of cotton with cottons."² Nehru says that "the spreading, creeping movement of British goods, chiefly cloth brought death to the hand industries of India." Of the miseries heaped on the Indian artisan, Shri Nehru quotes a British Governor General reporting in 1835 that "the misery hardly finds a parallel in the history of commerce. The bones of the cotton-weavers are bleaching the plains of India."³

What was more serious was the competition of the English goods in India and the world markets. Had not such heavy duties and the prohibitory decrees existed, the mills of Paisley and Manchester would have been stopped at their outset and would have scarcely been set in motion, even by the power of steam. They were created by the sacrifice of Indian manufactures. The British manufacturer employed the arm of political injustice to keep down a competitor with whom he could not have contended on equal terms.

5. The Laissez-faire Policy of the Indian Government

The Government not only lent a helping hand to the struggling handicrafts but sometimes went out of their way to give direct assistance to English manufacturers in exploiting the Indian market. The railways carried the products of the English manufacturers everywhere in the country, replacing home-made goods by foreign goods and encouraging the export of the raw materials.

¹ R. C. Dutt, *The Economic History of India in the Victorian Age*, 1950, p. 157.

² Marx, *Articles on India*, p. 22.

³ J. L. Nehru, *Op.Cit.*, p. 419.

The foreign trade of the country expanded at the cost of the domestic trade and an unhealthy and one-sided development of the country's resources was the consequence. As Ranade puts it, "The great Indian dependency of England has during this (19th) century come to supply the place of the old colonies. This dependency has come to be regarded as a plantation growing raw produce to be shipped by the British agents in the British ships, to be worked into manufactured articles by British skill and capital, and to be re-exported to this dependency by British merchants to their corresponding British firms in India and elsewhere. The development of steam-power and mechanical skill joined with increased facilities of communication, have but lent strength to this tendency of the times and as one result of the change, the gradual ruralization of this great dependency, and the rapid decadence of native manufacturing trade became distinctly marked."¹

Employment in Cottage and Small Industries

It has been calculated on the basis of Census figures that in 1931, in India 6,141,000 persons engaged in cottage industries; 1,482,000 workers in large-scale industries and 228,000 in small-scale industries.² Today the cottage industries employ 20,100,000 persons as shown in the following table³ :—

No. Employed in Cottage Industries

Industry	Workers in Millions	Industry	Workers in Millions
Textile	5.0	Chemical Products (vegetable oil)	1.0
Leather	2.4	Food	2.0
Wool	2.0	Dress and Toilet	1.1
Metals	4.0	Miscellaneous	0.6
Pottery, ceramics	2.0		
		Total ...	20.1

Thus it will be observed that cottage industries and small-scale industries give employment to 20 million persons and produce goods worth Rs. 1,200 crores per annum. According to the National Income Committee, 1950-51, the output of small enterprises was Rs. 910 crores and they employed nearly 11½ million workers while the output of factory establishments, which employed nearly 3 million workers, was worth about Rs. 550 crores.

The small-scale and cottage industries are spread over throughout the country and are not concentrated in big cities

¹ M. G. Ranade, *Essays on Indian Economics*, pp. 106-7.

² I. L. O. *Report on Industries Labour in India*, p. 17.

³ *India and Pakistan Year Book*, 195-53, p. 165.

unlike large-scale industries. Hence, they have not given rise to serious housing problems or the health and sanitation problems, which large industries have created. They must satisfy the following conditions :—

(i) They should be such as can be taken up by the ryot profitably without any encroachment upon his husbandry.

(ii) They should be such as can be performed by his own unskilled manual labour and that of his family.

(iii) They should involve small capital outlay which can be provided by them.

The National Planning Committee have recommended the revival and development of the following industries¹ :—

(1) Agricultural Industries

(1) Husking of paddy and pulses, (2) Grinding of wheat and other cereals, (3) Oil pressing or crushing of oilseeds, (4) Gur and sugar making, (5) Confectionery and sweet making, (6) Preservation of fruits and vegetables and preparation of pickles, *chutnis*, *achar*, jams and condiments, (7) Tobacco, snuff, *zarda*, *sukha* and *biri* and cigar making, (8) dairy farming and poultry farming, (9) Beekeeping and honey collection, (10) Rearing of live-stock.

(2) Textile Industries

(1) Cotton ginning, (2) Cotton spinning, (3) hand weaving of cloth, *newar*, *dowris* out of mill-yarn.

(3) Wood-working Industries

(1) Sawing, (2) Village carpentry, (3) Furniture and cabinet making, (4) *Moondhas* and cane chairs making, (5) Bamboo work and basketry, (6) Making of tomtoms, carts and cartwheel, (7) Making of combs, toys, clogs and "hook" *takkis* : flutes and other miscellaneous articles.

(4) Metal Industries

(1) Extraction of metals from ores, (2) Village smithy, (3) Cutlery, (4) Electroplating, (5) Manufacture of trunks, boxes, safes, locks and steel furnitures, (6) Brass and bell-metal work, (7) Wire drawing and manufacture of *salma* and gold and silver leaves, (8) Making of cheap ornaments and utensils of alloys.

(5) Leather and Allied Industries

(1) Tanning, (2) Manufacture of foot-wear, *chappals* and leather goods like suitcases, handbags, etc., (3) Manufacture of fat and manure from dead animals, (4) Bone crushing, (5) Horn work, (6) Glue and gutts making.

(6) Ceramic Industries

(1) Village Pottery, (2) Brick and tile manufacture, (3) Manufacture of glass bangles, (4) Manufacture of stoneware and porcelain

¹ N. P. C. Report, Op., cit. p. 167-168.

articles, (5) Washing of China clay, (6) Soft and hardstone and slate industries, (7) Manufacture of stone boulders, ballasts, chips, etc., (8) Manufacture of lime.

(7) Chemical Industries

(1) Lac Manufacture, (2) Making of lac bangles, (3) Manufacture of dyes, inks, paints and varnishes, (4) Manufacture and refining of saltpetre, (5) Soap making, (6) Manufacture of catechu, (7) Manufacture of miscellaneous toilet requisites such as *Itir*, hair oils, scents, brillianlines, cold creams, incense, etc., (8) Manufacture of indigenous drugs and medicines.

(8) Miscellaneous Industries

(1) Printing and book binding, (2) Making of *Tikkis* and unsel articles, (3) Making of musical instruments, (4) Silvering of glass, (5) Button making, (6) Paper making, (7) Manufacture of charcoal.

(9) Fishing and Pisciculture

(1) Fish oil extracting, (2) Fish manure making, (3) Icing glass and gelatine making.

Which industries should be developed?

It is interesting to note that all over India there is a tendency for non-agricultural subsidiary occupation, whereas the cultivating tenants have an agricultural subsidiary occupation. The agricultural labourers render the greater proportion of agricultural subsidiary occupation for each sex. Since most people follow more than one occupation, the different aspects of their combined callings can hardly be analysed, and the nature of agricultural and non-agricultural subsidiary occupation cannot be clearly distinguished. For instance, the tenant cultivates his land, works as hireling on his neighbour's fields, sublets a portion of his land, deals in grain and money-lending. Similarly, a landless labourer works as hireling, artisan, trader, pedlar, and cultivating tenant. In U. P. and the Punjab there is a combination of an agricultural with some non-agricultural occupation, but in Bengal and Bihar there is a greater proportion of those who maintain a subsidiary agricultural occupation along with their main occupation. It is due to the fact that in those provinces there is not much scope for outside multiple cropping and horticulture which is in itself very profitable.

Whether subsidiary industries of an agricultural nature are more lucrative than non-agricultural, will depend on such factors as accessibility to raw materials, initial outlay, outside demand, capacity for long-term employment, and possibilities of expansion. This will also depend upon a judicious and well-planned introduction of those industries only which are easy to start with and leave a big margin of profit to the labourers.

The selection of industries for rural areas will be based on the regional facilities and comparative advantage of particular districts in regard to the supply of raw material, availability of adequate finance and the existence of a permanent market. A plan of rural industrial development which does not take these preliminary conditions into consideration, will most likely fail to achieve the desired end, because subsidiary rural industries will have a direct and complementary relationship with agricultural seasons and the supply of labour power. It must be, therefore, fully realised that the industry selected should be (1) Sericulture, (2) Eri-rearing and spinning, (3) Tassar rearing, (4) Woolsharing, spinning and blanket and rug-weaving, (5) Jute spinning and weaving, (6) Rope making, (7) Mats and matting and fans, (8) Calico printing and dyeing of cotton and silk cloth, (9) Tailoring, embroidery (sari borders, *Nakhi* and *Gota* and lace work) needle work and knitting, (10) Hat, cap, turban, and shoe-lace making.

There are industries which have no inherent weakness and which can survive under modern conditions. They are closely related with agriculture and require simple tools. (i) In many cases the handicrafts produce goods which are artistic or decorative in character and which cannot employ automatic machinery and which have no scope for the large-scale production, or which are not any cheaper or better for being machine-made rather than hand-made. The products of such goods can be revived. Goods of variety and different tastes for artistic skill are not capable of being profitably carried on large scale by modern mechanical appliances such as silk sari manufacturing and hand painting. (ii) Again, industries catering for personal taste like tailoring, etc., by their very nature fall under this category. (iii) Many of the improvements in the material equipment of the civilization give rise to a number of small establishments to keep them going, for example, machine repairing industries with the modern big factories. (iv) New industries, so long as they are in experimental stage are first tried on a small scale and it is only when their success is demonstrated that they are organised on a large scale.¹

The proximity of the market and the intimate knowledge of the customers' needs gives an advantage to the cottage industries over the factory. Thus some kinds of headwear, *dhotis* and *saris* made by the handloom weavers, have not been displaced by the modern factories. The weavers of Banaras and Madura, and those engaged in making embroideries in Lucknow and Delhi and lace in Surat supply commodities for which the demand in the country has not been seriously affected by competition with similar machine-made articles. The metal workers, the shoemaker, the

tailor, the goldsmith, the confectioner and other craftsmen fall into the same class and are similarly protected. So all such industries must be thoroughly reorganised and established on sound basis.

Difficulties of Cottage Industries and Suggestions for Improvement

The cottage and rural industries are at present labouring under serious handicaps, the chief of which are those relating to finance, marketing and organisation. The Bombay Industrial and Economic Committee Report divides under six heads the handicaps under which cottage and small-scale industries suffer, *viz.*, (1) Finance, (2) Marketing, (3) Technique of manufacture, (4) Raw materials, (5) Taxation and (6) Other difficulties.

1. Finance

According to the Indian Central Banking Enquiry Committee from the view point of finance the artisans can be divided as follows :—

(i) *Independent Artisans* who buy the raw material on cash basis and sell the product in the open market at the best possible price available. They devote part of the week or the month in producing the articles with the help of their family members and one or two employees and spend the rest of the week or the month in selling their wares. They have to borrow funds on 12 to 18 per cent interest and hence are hampered by lack of finance both for appliances and for raw materials. This drawback together with the marketing arrangements reduces their productive capacity.

(ii) *The Karkhanadars* have either got a shed of their own where the workers come and complete the work or they distribute the raw material to the workers to be worked up into finished products at their homes. The kharkhanadars possess a small capital of their own and may also borrow money at a heavy rate of interest ranging between 12 to 18%.

Besides these two groups there are independent artisans who purchase raw materials from the *Sowcar* on payment of a price which is much higher than the market rate. In some cases, they are allowed to sell the product in the bazar and pay back the amount to the *Sowcar*. But in most cases the *Sowcar* has a lien on the finished product and purchases it at a price lower than it could fetch in the open market.

This class of artisans suffer both ways by paying higher price for the raw material and obtaining lower price for the finished goods. The rate of interest on his loans works out to about 18 to 30 per cent.

According to Central Banking Enquiry Committee this method of financing is due to (1) lack of capital, (2) uncertainty about marketing of products on account of cheap imported substitutes, (3) inability to organise in business, (4) obtain uniformity of quality in raw material and (5) in the workmanship, (6) need for co-ordinating specialised functions in such industries, (7) lengthy technical processes in some industries.

The Bengal Industrial Survey Committee, recommended three measures : (1) A large number of Co-operative Industrial Societies should be set up by a planned drive ; (2) The State-Aid to Industries Act should be suitably modified so as to make available to small industries financial assistance on easy terms and in adequate scale ; (3) A financing machinery on the lines of the Industrial Credit Syndicate—but reorganised on a new basis so as to serve the purpose of assisting small industries more efficiently and more adequately—may be considered.

The Shroff Committee (1954) also considered the case of small-scale industries—including the cottage industries and recommended these measures :—

(1) With regard to the provision of working capital it recommended that the delay in making payment of Government, purchases from such industries should be avoided and they must be paid promptly. Moreover, the charge for registration of hypothecation by incorporated enterprises should be reduced so as to encourage their borrowing from the banks. (2) For long-term finance, it suggested that the State Governments should give greater assistance to these industries under the State-Aid to Industries Acts. Hence, greater provision should be made for giving loans to these industries and the procedure for giving loans should be simplified. (3) It also suggested that the State Finance Corporation should give loans to small-scale industries and that “efforts should be made to work such organisation by two or more State conjointly”. It also recommended the constitution of a Special Development Corporation for small-scale industries with a capital of Rs. 5 crores. Further, the Corporation should through a separate branch take interest in organising small-scale industries and assist them in the matter of joint purchase of raw materials, standardisation of products, organised marketing, distribution, publicity, technical service and managerial advice.

In All 12 States Financial Corporations have been set up specially in the Punjab, Saurashtra, Rajasthan, Travancore-Cochin, Hyderabad, W. Bengal and Bombay and rules and procedures governing the administration of State Aid to Industries Acts have been liberalised.

The International Planning Team observe that in India the credit institutions have not adopted the policy of granting loans on

the security of land and buildings, and hence these industries have to depend for finance on village Sahukars, Karkhanedars and moneylenders, who charge high rates of interest. It, therefore, recommended that : "(a) the Commercial Banks should increase their loans and advances to these industries by delegating more authority to branches to make loans to them ; (b) Co-operative Banks should take a greater interest in financing these industries ; (c) each State should have a State Finance Corporation part of whose funds should be inclusively reserved for small-scale industries ; and (d) a system of loans against the security of real estate mortgages should be developed."¹

Fortunately, the small-scale and cottage industries have been receiving financial assistance from the Government both directly and indirectly. The Central Government incurred an expenditure of Rs. 50 lakhs during the four years ending 1952-53 on cottage industries mostly by way of assistance to State Governments. This expenditure was increased to Rs. 5.4 crores in 1953-54. In addition to this an expenditure of Rs. 36 lakhs was sanctioned for 1953-54 for small-scale industries. The State Governments have also been providing finance, under State Aid to Industries Act, to these industries.

During the First Plan Period, provision was made for the expenditure of Rs. 15 crores on the part of the Central Government and Rs. 12 crores on the part of State Governments. The expenditure actually incurred on the industries—village oil industries, soap making with neem oil, paddy husking, palm gur industry, gur and *khandsari*, leather industry, woollen blanket making, high grade hand-made paper, bee-keeping and cottage match industry—during the First Plan amounted to Rs. 33.69 crores as will be gathered from the following table :—

Outlay on Village and Small Industries in the First Plan

	(In crores of Rs.)		
	1951-55	1955-56 (Budget)	1951-56
Handloom	6.5	4.6	12.2
Khadi	4.9	3.5	12.3
Village Industries	1.1	3.2	2.8
Small-Scale Industries	2.0	3.2	4.4
Handicrafts	0.4	0.6	0.8
Silk and Sericulture	0.8	0.5	0.6
Coir	—	0.1	0.2
Total ...	15.7	15.5	33.69

¹ *Report of the Ford Foundation International Planning Team on Small-Scale Industries.*

2. Marketing

Cottage industries also have great difficulties in marketing their finished products. Lack of suitable marketing organisation and mutual co-operation, lack of longer staying power due to extreme poverty and isolation lead easily to the exploitation by the middlemen. It is necessary that all the State Governments should assist these industries by propaganda, research, demonstration and technical assistance through organised exhibitions and fairs. Dr. R. K. Mukerjee recommended the formation of a Central Buying and Trading Organisation which should be utilised for working out a constructive policy of commercial and technical information and guidance without which industries will remain unrelated to the exact nature of demand or the cost of production abroad. The Arts and Crafts Emporium at Lucknow, the Swadeshi Stores at Bombay, the Commercial Museum run by Calcutta Corporation and the Industrial Museum run by the Department of Industries, Bengal help advertise the indigenous industries. Yet more Emporiums and Sales Depots should be opened. Further a Central Intelligence Agency should be established with a view to advise on improvement and reconstruction of processes of village industries, to introduce and apply modern mechanical implements and tools, to experiment and introduce improved designs and to collect and diffuse information on commercial subjects like market intelligence, foreign competition and methods of organisation and propaganda. The Central and Provincial Banking Committees have recommended the establishment of licensed warehouses and co-operative wholesale depots for storing and sale of products of cottage industries. Co-operative purchase and sale societies should also be instituted in large numbers for supplying raw materials and tools and the disposal of finished product. But the working of such co-operative sale societies in India seems to belie this expectation. *In the first place*, considering the poverty and small resources of the workers, co-operation in marketing and financing of industrial product has not progressed to any extent. *Secondly*, what societies were organised have not worked so satisfactorily as to warrant the conclusion that co-operation among cottage workers has struck roots. Nevertheless efforts must be made in this respect.

As regards the cottage industries the Bombay Industrial and Economic Commission recommends the organisation of workers into associations to secure them the benefits of large-scale organisation. But "this kind of organisation, we are convinced, cannot be expected to spring spontaneously out of the endeavours of the artisan classes" due to their ignorance, illiteracy, conservativeness and the grip of the middlemen over them. According to the Report, State help and initiative of substantial type over a long period are absolutely necessary and they also opine that State management

is also necessary. They also recommend the formation of a Provincial Cottage Industries Research Institute, the formulation and execution of a stores purchase policy with a cottage bias, the holding of periodical exhibitions and creation of permanent museum for these industries.¹

The International Team recommended the setting up of Export Development Offices for developing export markets and it also stressed the need of developing the internal market. In this connection it observed, that, "with its huge population and its low consumption of manufactured and other goods, India possesses the largest potential market in the world." It will take some time and efforts to make the 'latent' needs of the people to take the shape of effective demand but when the latent needs of these folks begin to change into felt needs, India will experience, perhaps, the greatest industrial revolution that the world has ever seen."

Happily during the First Plan Period the Government accepted the principle of the Stores Purchase Committee's recommendation that certain classes of stores should be reserved exclusively for purchase from village and small industries and that price differentials should be allowed to them over the products of large-scale industries. The value of the purchases made from cottage and small-scale industries by the Directorate General of Supplies and Disposals has increased from Rs. 66 lakhs in 1952-53 to Rs. 105 lakhs in 1954-55. A number of Emporiums and Sales Depots for handloom, handicrafts and village industries have been established during the First Plan period. The marketing of the products of small-scale industries is expected to receive an impetus as a result of the establishment of the National Small Industries Corporation. Under the Second Plan four more Corporations are to be set up at Bombay, Calcutta, Madras and Delhi. Besides as a part of the technical service programme of the Central Government, the services of foreign experts for selected industries such as footwear, surgical instruments, lock-making, surveying and drawing instruments and electro-plating and galvanising have been obtained

3. Technique of Manufacture

The cottage workers have no idea of the recent improvements in the art of technique of production for they are ill-equipped with necessary information about them. It is, therefore, necessary that the State Government should organise technical training and education by starting technical schools in all industrial and artistic centres and by giving an industrial bias to the primary and secondary education. Besides the opening up of technical institutions

1 *Bombay Industrial and Economic Enquiry Committee*, p. 94, 158.

it is necessary that the State-aided demonstrations and hand-loom factories should be set up to train intelligent artisans. After the demonstrations prove successful they may be handed over to private firms or organisations; jails and reformatory schools should also provide instructions in industrial crafts to their inmates. Introduction of new patterns and designs, invention and introduction of efficient tools and implements and research should be carried on by experimental factories and industrial institutes set up by Governments. Peripatetic demonstrations should be conducted by Government demonstrators. Foreign technical scholarships should be more liberally granted. Marketing and financial facilities should be provided by the State as in Germany, Switzerland, Denmark and Hungary. The rural industries must be protected through Tariff from foreign competition.

On the recommendations of the International team, the Central Government, has set up four Regional Small Industries Service Institutes with a number of branch units to provide technical assistance, advice and services. The All-India Khadi and Village Industries Board are doing excellent work in educating the workers and improving the quality of the products. This Board has set up a Technological Institute for village industries and has also established central and regional institutions for training of the workers. The All-India Handicrafts Board has assisted research in new designs and patterns and in improved processes, organised a survey of marketing of handicrafts both within the country and abroad. The Coir Industries Board has promoted the formation of co-operative societies for the collection of husk and the production and supply of yarn.

Village and Small-scale Industries Under the Second Plan

The Planning Commission appointed the Village and Small Scale Industries Committee under Prof. Karve in June 1955 to examine the problem of small-scale and cottage industries and to frame a scheme so that (a) a large proportion of the increased demand for consumer goods in common use might be met by these industries during the Second Plan period, (b) that they might provide progressively increasing employment opportunities, and (c) the organisation of production and marketing might be done on co-operative lines.

This Committee has already submitted its report. The Committee has kept three principal aims in view in making its proposals :

“(a) to avoid as far as possible, during the Second Plan period, further technological unemployment such as occurs specially in the traditional village industries ;

(b) to provide for as large a measure of increased employment as is possible during the plan period through different village and small industries ; and

(c) to provide the basis for the structure of an essentially decentralised society and also for progressive economic development at a fairly rapid rate."

This Committee recommended the development of small and cottage industries producing items of common consumption such as cotton cloth, woollen goods, hand-pounded rice, vegetable oils, gur and *khandsari*, leather foot-wear and matches. The Committee also gave its attention to such industries as sericulture, silk-weaving, handicrafts, coir spinning and weaving. The Committee recommended the outlay of Rs. 260 crores, *i.e.*, an annual expenditure of Rs. 52 crores. The expenditure is expected to give fuller, whole-time, part-time or seasonal employment to nearly 5 million people. The Committee made the following important suggestions :—

(i) The State should support the co-operatives with guarantees and finances in order to enable them to render effective help to the village and small-scale industries.

(ii) The State should fix minimum prices at which co-operatively produced articles should find a market, and if there are any losses by selling at cheaper than the purchase price, they should be met by the State.

(iii) In order to give a scope for the expansion of village and small industries, a ceiling should be fixed on the output of factory industry and any increased demand should be met exclusively or partially by the village and small-scale industries, *e.g.*, in the case of cotton textiles it recommended that the output should be pegged at the present level of 5,000 million yds. and that of powerlooms at 200 million yds. and the whole of the expected additional demand for 1,700 m. yds. in the plan period should be met by the handloom and khadi industry. In case of rice, it recommended that new mills should not be allowed to be set up or increase their existing capacity except when hand-pounding cannot be organised owing to special causes such as scarcity of labour. In the case of oilseeds, the setting up of new mills should be prohibited except where alternative methods of crushing oilseeds are not available. However, the Committee did not favour a ceiling on the production of the factory industry till such time as "the process of manufacturing of *khandsari* sugar is improved considerably." In case of all other industries the Committee recommended the method of levying a cess on the mill industry to produce funds for the improvement and betterment of the village and small-scale industries.

However, these suggestions have not been accepted. The Planning Commission provides for an outlay of Rs. 200 crores for the development of cottage and small-scale industries as shown below :—

Outlay on Village & Small-scale Industries in the Second Plan

Hand loom

Cotton weaving	56·0	
Silk weaving	1·5	
Wool weaving	2·0	
	<hr/>	59·5

Khadi

Wool spinning & weaving	1·9	
Decentralised cotton spinning & khadi	14·8	
	<hr/>	16·7

Village Industries

Hand Pounding of Rice	5·0	
Vegetable oil	6·7	
Leather foot-wear & Tanning	5·0	
Gur & khandsari	7·0	
Cottage match	1·1	
Other Village Industries	14·0	
	<hr/>	38·8
Handicrafts	9·0	
Small-scale Industries	55·0	
Sericulture	5·1	
Coir Spinning & Weaving	1·0	
General Administration	15·0	
	<hr/>	200·0

Out of this amount the Centre would spend Rs. 25 crores and the States Rs. 175 crores. In addition to Rs. 200 crores, a sum of Rs. 11 crores has been provided for cottage and medium industries and industrial loans and Rs. 7 crores for vocational and technical training in the programme for the rehabilitation of displaced persons.

The principal village industries to be developed during the Second Plan are hand-pounding of rice, vegetable oil, leather foot-wear and tanning, gur and *khandsari* sugar, cottage match. The targets for some more important industries have been laid as follows :

“It is proposed to increase the number of handlooms in the co-operative field from 1 million to 1·45 million ; and to introduce technical and other improvements thereby raising the production

per unit from about 4 yds. to about 6 to 8 yds. a day, the average to be achieved being 6 yds. a day, for about 300 days in the year.

"Tentative programme has been fixed for the manufacture and introduction of 25 million multi-spindle *charkhas* over a period of 5 years offering prospects of full-time and part-time employment to about 5 million persons.

"Production of traditional *khadi* is proposed to be raised from 34 million yds. (including 5 million yds. on self-sufficiency basis, to 60 million yds. (including 20 million yds. on self-sufficiency basis) in the course of the Second Plan at a total expenditure of Rs. 21 crores.

"The development programme for woollen *khadi* aims at increasing the production of blanketing cloth from 250,000 yds. in 1956-57 to 1 million yds. in 1960-61, of the sub-standard cloth from 500,000 yds. to 1 million yds. and of other varieties of cloth from 125,000 yds. to 1.5 million yds.

"The programmes for the oil industry are the improvement of existing *ghanis*, replacement of 50,000 of existing *ghanis* by improved or Wardha *ghanis* and setting up of 400 production-cum-demonstration centres all over the country with two improved *ghanis* each and a filter press.

"The production of hand-made paper is proposed to be raised to 4,400 tons by 1960-61 by setting up 80 factory units, 400 cottage units and 400 school units."

RURAL TRANSPORT

I. Importance of Roads

Roads are embanked lines of ways well drained, with easy inclinations and hard, smooth surfaces allowing the use of wheeled traffic with a minimum of resistance carried by means of raised bridges over water courses of the country. The importance of good and efficient means of rural transport for a country like India need hardly be stressed. Good roads are necessary for both economic and cultural progress ; and defence is unthinkable without a well-developed and correlated road communication system. India's resources, manpower and production could be harnessed in the interest of the common man only if this vital aspect of her communication system is not neglected. The road transport by its very nature touches the heart of the country and effects the well-being of the people at every turn. In India, for the bulk of the population which is still hibernating in villages, it is woefully deficient. Even in Bombay, which is a State far advanced economically compared with other areas, there are tracts where 40 to 75 per cent of the area is not served by a road at all and by no form of transport either.

In the words of Agriculture Commission, "Transportation is an integral part of marketing, and modern commercial development tends everywhere to enhance the value and importance of good road communication. The provision of good transport is the surest way of stimulating agricultural production and raising the standard of life in rural areas by facilitating the substitution of commercial for subsistence farming. It will lessen the constant strain on the health and stamina of draught animals and increase their efficiency. It will reduce the wear and tear of the vehicle and will cause considerable saving in time. Again, roads will be of particular assistance for the development of industries connected with the preparation of agricultural produce for export or internal consumption. They will also facilitate the decentralisation of industries, the undue concentration of which at present is a source of many social and economic evils."

Roads are the symbol of a country's progress. "If you wish to know", says an American thinker, "whether society is stagnant, you must learn something by going into the universities and libraries ; something also by the work that is going on in cathedrals and churches, or in them ; but quite as much by looking at the roads. For if there is any motion in the society, the road, which

is the symbol of motion, will indicate the fact. When there is activity or enlargement or liberalizing spirit of any kind, then there is intercourse and travel, and these require roads. So if there is any kind of advancement going on, if new ideas are abroad and new hopes rising, then you will see it by the roads that are building. Nothing makes inroad without making road. All creative action, whether in government, industry, thought or religion, creates roads." Ruskin has rightly remarked, "All social progress revolves itself into the making of good roads."

There is a two-fold correlation between road development and increased agricultural production. *Firstly*, intensive cultivation to exploit the resources of land fully, is made possible due to easy transport of manure and fertilisers, good seeds and better agricultural implements. *Secondly*, the possibilities of extensive cultivation are also increased with good road system. Fallow and wastelands can be brought under the plough and made to yield a variety of products. Road development also promotes a change in the nature of agricultural production by diversion of cultivation from food to non-food and commercial crops, as ready market is brought into existence conveniently through road development in and around the production areas. The development of roads also opens the urban market for the cultivator, besides reducing the transporting costs to a very great extent.

Good road system also helps agriculture indirectly. On the one hand, it breaks up the isolation of villages and helps in spreading education and on the other hand, it lessens the strain on the health and stamina of draught animals and increases their efficiency. Thus good road means closer link between different areas which makes for free exchange of ideas and replacement of old prejudices by the modern ways of life. "Isolation perpetuates ignorance. Good roads promote free exchange of ideas no less than of merchandise."¹

Good roads are also a source of economy to the railways and are more or less essential for their prosperity by acting as feeders to them. In this connection the Royal Commission on Agriculture has rightly remarked, "Without good and sufficient roads, no railway can collect for transport enough produce to render its operations profitable ; while the best roads cannot place the producer of crops destined for market overseas or in distant areas of the sub-continent, in touch with the consumer."

Thus it will be observed that the agricultural prosperity and improvements depend to a large extent on the development of a good road system. Hence, Dr. Ramnadhan has rightly said, "If it is true that the strength of an army lies in its legs, it is more true that the strength of our agriculture lies in our roads."²

¹ Royal Commission on Agriculture.

² V. V. Ramnadhan, *Road Transport in India*, 1948.

II. Development of Roads in India

In 1950-51, India had 97,546 miles of metalled roads and about 1,51,000 miles of unmetalled roads, the total mileage of roads being 2,48,546. But this mileage is very small in comparison to the vast area of the country and the population it has to serve.

Roads in Nagpur Plan

In 1943, a Committee of technicians met at Nagpur to work for the road development in India. It placed the target of achieving 400,000 miles of roads in the then existing India by the end of 1963. Its objective was to make a balanced development of all classes of roads so that every village in a well-developed agricultural area is brought within easy reach of a main road. The plan envisaged the construction of new roads, improvement of the existing roads and the development of minor district and village roads. The targets to be achieved were placed as below :—

National Highways	22,000 miles	at Rs. 47 crores
National Trails	3,000	„ 3
Provincial Highways	65,000	„ 121
District Roads—major	60,000	„ 62
District Roads—minor	1,00,000	„ 80
Village Roads	1,50,000	„ 30
	<hr/>	<hr/>
	4,00,000 miles	403

Roads under First Plan

But somehow the plan failed to function. Then came the partition and this seriously affected the new development. Due to the partition, the total proposed mileage in Indian Union had been reduced to 3,11,000 miles, with a corresponding change in the costs from Rs. 403 to 373 crores. Between 1947 and 1951, although there were so many urgent demands on the State's resources a total amount of Rs. 48 crores was provided for the road development. So that by the beginning of the First Plan we had 97,000 miles of well-made metalled roads and 1,47,000 miles of low grade unmetalled roads in the country. Altogether about Rs 155 crores were spent on the roads during the five years. As a result of this 10,000 miles of metalled roads and 20,000 miles of unmetalled earth roads were built during the First Plan period, besides an upgrading of 10,000 miles of surface roads. In the First Plan the construction of 640 miles of missing links, 40 major bridges and improvement of 2,500 miles of existing roads were expected to be completed. At the end of the plan, the works completed include the construction of nearly 650 miles of missing links, 30 major bridges and an improvement and asphaltting of 4,000 miles of the existing sections of the national highways and the provision of the two-lane carriageway on about 300 miles.

Under the Second Plan

The total allotment for roads in the Second Plan, including the Central and State Plans, is Rs. 246 crores in addition to Rs. 25 crores to be provided from the Central Road Fund. It is estimated that with this programme of investment, the target of road mileage under the Nagpur Plan will be practically reached by 1960-61.

In addition to the works carried forward from the First Plan, the programme of National Highways will include the construction of 600 miles of missing links and 60 major bridges, and the improvement of 17,000 miles of existing roads and the widening of 3,700 miles of the existing sections. In addition to national highways, the programme include the construction of 1,150 miles of roads and upgrading of 500 miles of roads which were commenced during the First Plan as well as some inter-State roads and roads of economic interest which were started in 1954.

Under the programme of road development in the States, about 18,000 miles of surfaced roads are expected to be added during the Second Plan period

III. Present Position of Roads

India possesses nearly 248,000 miles of roads in an area of 1,210,000 sq. miles. The total mileage is too little for a country of India's size and population. The following table will show how inadequately India is equipped with roads as compared to other countries¹ :—

Country	Road mileage per sq. mile of area	Roads per 1,000 miles	Road mileage per 100,000 population	Remarks
Italy	0.89	1,467	376	Roads are motorable
Japan	3.00	3,988	728	
France	2.02	2,070	381	"
Greece	1.84	...	934	
Germany	0.95	...	260	Only 35% of the mileage is motorable in all weathers
U. S. A.	1.01	1,006	2,411	
India	0.20	201	73	
Canada	...	160	4,398	
Australia	...	168	6,602	

Thus Britain has ten times and U. S. A. five times more roads than we have in India. According to the recognised standard, India has a lesser mileage of roads than is expected in a desert

¹ *Eastern Economist, Annual*, 1952, p. 1064.

in America. Roads in India both metalled and unmetalled are too few, both in regard to area and population. The best served part of the country is South India and the areas worst served in this respect are Rajasthan, Bengal, Assam, Orissa and the Punjab. These areas are either too arid and thinly populated or too rainy and jungly with unbridgable gorges and streams which dissect them.¹

The cost of building roads depends largely upon the nature of the country through which they pass and varies greatly in different parts of India. Thus the roads are rendered expensive in Bengal by the necessary embankments. The large amount of drainage to be crossed and the inferior nature of the metalling stone, if used, must be brought from enormous distances and the only possible substitute for it as a road surface is the expensive and imperfect one of broken bricks. In Bombay and in parts of Madras also the cost of building roads is very high due to the hilly nature of the country. The cost of maintenance also varies because of the many bends, cuttings and bridges. Portions of the hills need be cut away before the road can be built. It is fortunate that in the Punjab and Upper Ganges valley *kanker* occur in the alluvial and can be used on the roads. It is no use piling broken stones on a soft stretch of land. A metalled road must have a good foundation at first.

The following table shows the mileage of surfaced and unsurfaced roads in various States.²

States	Surfaced mileage	Unsurfaced road mileage
Madras	23,985	14,380
Bombay	10,826	9,923
West Bengal	3,776	7,991
Orissa	2,765	3,844
U. P.	8,576	23,664
East Punjab	2,727	8,364
Bihar	4,700	27,942
M. P.	6,418	3,096
Assam	1,179	12,947

Thus U. P., Bombay, Madras and Bihar have the largest proportion of metalled roads owing to the level nature of the country, lack of railway communication and the available of the local supplies of road materials.

III. Defects of Rural Road System

Communications from the fields to the village and from the village to the mandis are often extremely poor and defective. Bad

¹ *Indian Year Book*, 1945-46, p. 46.

² Govt. of India, *Our Road*.

roads, lanes and tracks connecting the village with the market not only add to the cost of production and transportation (which in India are estimated to be about 20% of the price even where the wholesale dealer is within a radius of 15 miles from the village) and aggravate the strain on bullocks and other pack animal but also lead to the multiplication of smaller dealers and the intermediaries.

(ii) They also restrict by hindering cheap and rapid movement of agricultural produce. It has been observed that, "More than half of the perishable produce of India runs to waste on account of delay in reaching the market consequent upon the limitation of transport facilities; the use of motor lorries particularly, can convert this waste into wealth".

(iii) The cart tracks in the countryside are seldom maintained in good condition for traffic. They are mere water courses, narrow, deep and run zigzag often through fields and after the rainy seasons may take a new course altogether. "Nearly whole of the made roads are only so far made as to be just practicable for carts. They admit of carts moving in dry weather with light loads at very slow pace and by very short stages. But by far greater portion of these roads are unbridged and have no properly built causeways and a heavy shower cuts off the communications wherever the stream crosses a line; and they are in many cases so unfit to stand the effect of the wheels while the surface is wet that in the monsoon months they are out of use except for cattle or foot passengers."¹

(iv) During floods communications are held up for periods varying at times from hours to some days when they are turned into mud, slush and pools of dirty water.

(v) Embanked roads or bridges and culverts are seldom found. Thus, if a small stream is met with, it is either crossed in boats or the track deviates a dozen miles in order to ford it at some favourable point. Again, the tracks are passable by carts only for eight months in the year. In the rainy season, travel or traffic by wheels is entirely stopped, and loads have to be carried on the heads of men wading through water or marsh. These fair-weather village roads cost little and are formed by merely clearing the surface of the jungle growth and leaving the approaches to the beds of the intervening streams, without drains or earth works of any kind.

(vi) Many tracks again are almost unaided by any labour or the traffic very much as a natural stream of water might do, making for itself a passage along the easiest and the least resisting line, for it is often found that the removal of a few comparatively

1 Quoted D. R. Gadgil, *Modern Industrial Evolution of India*, p. 4.

small obstacles to a prodigious extent, shortens and cheapens a natural track between two points distant a great many miles from each other. Thus the surface trade tracks, often of great width and deeply fissured with heavy ruts, scarcely visible through the thick coating of fine impalpable dust used for the transit during the dry season of merchandise carried on the backs of the pack animals or in rude carts drawn by yokes of bullocks, served probably for untold centuries all the requirements of the internal carrying trade of the country and even still form a not inconsiderable portion of the country's highway.

The condition of these roads in different seasons differs with the nature of the soil, e.g., roads in black soils as in Deccan become sticky and impassable during the rains, those in light *gorat* soils little less so, but they become easily scoured and get deeper, those in the sandy soils like those of western Rajasthan and northern Gujarat become impassable in hot summer months and people have to avoid using them at noon time, moreover, heavy dust-storms always deface the very existence of roads, while *moram* soils of Saurashtra are the least troublesome.

The bullock carts of the type generally used in the country cause a great damage to the road surface. Narrow iron tyres, which are fixed to the wheels, cause deep furrows on the roads. And once this furrow is caused on a road, the passage of further bullock carts on it is bound to deepen it. The P. W. D. Engineers in Delhi have estimated the intensity of pressure exerted on the road by an iron tyre cart to range from 800 to 1,800 lbs. per sq. inch. It was also found that on some surfaces the stress on the road was over 4,000 lbs. per sq. inch, whereas the maximum stress of a 10 ton Road Roller is not more than 550 lbs. per inch.¹ The damage done to roads by a loaded iron-tyred cart doing 4 miles a day was estimated to amount Rs. 228 per year. The destructive effect of ordinary carts on farm tracks was studied in the cane growing districts of North Bihar. The average country cart reduces its own-pay-load automatically as the season progresses and does a tremendous amount of damage to the road which has to be repaired before the next season.² The massive wooden hubs of ordinary cart wheels develop a lot of friction which is overcome by considerable extra pull exerted by the animals. This also means unnecessary loss of energy.

It is regrettable to note, that the position of our existing roads is far from satisfactory. Sir Kenneth Mitchel rightly observed during the Eighth Session of the Indian Roads Congress that "village roads and a number of district roads in

1 *Proceeding of Indian Roads Congress*, 1936, Vol. II pp. 29-39.

2 *A. I. C. C. Economic Review*, Vol. VI No. 4, June 15, 1954, p. 16.

India have not only progressed but have deteriorated with the increasing traffic of more crops, more travel arising from securing and general awakening. There have thus accumulated a burden of arrears of overdue improvement which is sometimes staggering to contemplate. There are hundreds and thousands of large villages, at some distances, from any road supposedly maintained by public authority, and many miles from any modern road and there is a general neglect of the link between village and the public roads. The people in those villages are primary producers of crops. Every maund of exportable surplus of foodstuffs, cotton, etc., originates in the village and starts its journey to market along the village or unmetalled district road, and the service which the people get from these roads is quite inadequate." There is an American slogan that "the community pays for good roads whether it has them or not, it pays more if it has not got them." We in India are paying heavily for not having enough good roads in our rural areas. The backward state of our agriculture and population can be attributed to poor communications. With roads as they are the peasant cannot market his produce speedily and hence he grows only such crops as do not deteriorate quickly. Vegetables, fruits, dairy and poultry products are produced only by the fortunate few who are able to transport these perishable products speedily to the market. We, therefore, require more roads and the improvement of the existing ones.

IV. Types of Road

Indian roads have usually been classified into four categories :—

(1) *The National Highways*

These roads traverse the length and breadth of the country, connect capitals of States, large industrial and commercial towns and ports. They also offer connections with broader land countries like Burma, Nepal and Tibet, Pakistan. The total mileage of such roads is about 13,800 miles. They are mostly surfaced.

The most important national highways are :—

(i) *The Grand Trunk Road*, running from Calcutta to Amritsar via Banaras, Allahabad, Kanpur, Aligarh, Agra, Delhi, Karnal, Ambala and Ludhiana.

(ii) *The Agra Bombay Road*, from Bombay to Agra via Nasik, Indore and Gwalior.

(iii) *Calcutta—Madras Road*, starting from Calcutta and passing through Sambalpur, Raipur, Vishakhapatnam, Baijwada and Guntur, ends at Madras.

(iv) *Bombay—Madras Road*, goes from Madras via Bangalore, and Poona to Bombay.

(v) *Bombay-Calcutta Road*, starting ° from Calcutta goes to Bombay via Sambalpur, Raipur, Dulia and Nagpur.

Other roads of this category are :—

(i) The Banaras—Nagpur—Hyderabad—Kurnool—Bangalore—Cape Comorin Road ;

(ii) The Delhi—Ahmedabad—Bombay Road ;

(iii) The road under construction from Ahmedabad to Port Kandala with a Branch to Porbandar ;

(iv) The Hindustan Tibet Road from Ambala to Tibet border via Simla ;

(v) The road from Delhi to Lucknow, Gorakhpur and Muzaffarpur with a branch road to Nepal ;

(vi) The Assam Access Road.

(vii) The Assam Trunk Road on the South Bank of Brahmaputra ;

(viii) Bareilly—Nainital—Almora Road ;

(ix) Manipur—Kohima—Imphal—Silchar Road ;

(x) Madras—Travancore—Road ;

(xi) Pathankot—Jammu Road ;

(2) *The State or Provincial Highways*

There are the main arteries of commerce within a State. They connect with the National Highways or with the highways of adjacent States, district headquarters and important cities.

(3) *District Roads*

They are below, the above two types of roads, in individual capacity which serve areas of production and markets, connecting them with one another or with highways and railways. They take traffic into interior of each district. Many of these roads are unmetalled and sometimes remain closed for long periods during the rains.

(4) *Village Roads*

They usually connect the villages and groups of villages with one another and with nearest district road, highway, river ghat or railway. Some of them are not much better than mere tracks.

It is unfortunate that none of the national highways can be considered safe, "All Weather Roads", according to modern Standards. The Madras—Calcutta Road in particular has not been bridged throughout its entire length and on all of these roads, there are places where serious interruptions to traffic are caused by floods.

V. Means of Transportation Rural Areas

It is rightly been said that India is an epitome of all types of transport agencies. Here one can find nearly all types of transport means right from the bullock carts to the camel-carts, horse-carts, buses, *ekkas*, river-ferries, railways, and aeroplanes. As India is a country of villages and where agriculture, still happens to be the main occupation of the people, the importance of bullock carts can be overemphasised. This overwhelming importance of bullock carts in the rural economy of the country arises because of these advantages :

(1) The structure of these carts is very simple and of rough design. Nearly all parts can be manufactured in the villages itself from the locally available raw materials. The repair of these carts is also easy and requires not much capital in cart-making.

(2) It has an advantage of low cost of service, as the feeding of the bullocks is not a permanent charge on the cart-owner because fodder is a by-product of agriculture. The agriculturist himself is a driver and this involves no extra cost or charge.

(3) The number of bullock carts in India (before the War) was estimated at Rs. 87 lakhs and the capital invested in them Rs. 261 crores. They carry roughly 100 million tons of goods per year and carry a large number of persons from one place to another. The earning from the goods traffic is estimated to be of the order of Rs. 200 crores per annum. About a crore of persons and two crore heads of cattle were said to be employed in the bullock cart industry.¹ The National Planning Committee, 1948, pointed out, "For allowing 100 journeys per year cart with one ton of freight per journey, over 50 crores of tons of produce must be carried by this ancient and still surviving mode of transport.... In terms of ton-miles it may be difficult to calculate this service, though an average of 10 miles per day for each cart for 200 days in a year is not excessive. It allows for the cart and the bullocks being out of service during the monsoon or sowing and harvesting seasons for transport, though even then, it does not lie idle and unremunerative like an empty railway wagon lying at a station yard. The above reckoning means 2,000 miles per cart per year, counting only a 10 ton miles per rupee, values the cart freight at Rs. 500 crores gross."² In fact they render almost an equal amount of service as the railways.

(4) They are indispensable for the village economy as no other vehicle of fine mechanism can possibly run on the bad village roads as the bullock carts can.

¹ *India*, 1956, p. 250.

² *National Planning Committee Report on Transport*, 1948, p.

Hence, their use in Indian economy cannot be dispensed with, although they can be improved upon to render more service with greater efficiency.

Besides bullock carts, horse-carts and camel carts also are used for carrying goods from one place to another but their place is now being taken up by motor-buses, although they have not yet fully reached the interior of the villages.

VI. Need of developing more and better Roads

The Royal Commission on Agriculture emphasized the fact that good communications are of great importance to the cultivators, for on them largely depends his opportunity for the favourable marketing of his produce. While admitting the necessity of good main roads, the Commission stressed on the importance of subsidiary communication which are even greater concern to the cultivators. They remarked, "The provision of excellent main roads adequate in all respects for every form of transport is one little benefit to the cultivator, if his access of them is hampered by the condition of the road which connects his village with them. What matters most to him is the road between his village and the main road and his market. We should, however, consider it unfortunate if the growing sense of the need for improving the main roads were to divert the attention from the need for improving the subsidiary communications. We, therefore, hold that along with the policy of developing main roads should go that of developing communications between them and the villages which are not situated immediately on them."¹

Therefore, what is wanted is that the village roads should serve as a link between the village market town or to the nearest public road of class I or II for the purpose of transport of agricultural produce by the cultivator. The villagers carry their produce to and bring their daily requirements from the market along such roads. The vehicle most used for transport is the bullock-cart, which can carry very small quantity at a time and the whole produce can be discharged at the mandi in a few trips in the season. For this purpose there is no need for a I or II class road or a motor vehicle for transport, even if the carts with pneumatic tyres may be introduced.

Recent sessions of the Indian Road Congress have laid stress on the destructive effect of iron-tired traffic on road surface. In the words of Sir Kenneth Mitchell, "India's roads have to carry the bullock-cart which would make short work of many of the inexpensive types of goods carrying the traffic of other countries. The community to its own great detriment and loss is using a type of cart which is so destructive that earth roads are nearly impossible. Dual-purposes roads, (*i.e.*, roads suitable for both the slow-moving

¹ *Economic Review, Op. Cit.*, p. 19.

iron-tired bullock-cart and the fast-moving rubber-tired motor vehicle) and segregation of traffic is well-nigh impossible."

The evolution of bullock-cart which would cause the minimum damage to the road surface is strongly advocated.

The use of pneumatic-tired carts have got the following advantages :—

The pneumatic tired cart, with roller bearing hubs is able to transport much greater load than an ordinary cart. Experiments conducted by A. R. I., Pusa have shown that carts with pneumatic tyres were able to carry 55 mds. of sugarcane against the maximum of 16 to 25 mds. carried by ordinary country carts. Consequently the cartmen's net earning go up. Besides the carting sores so commonly found on bullock's necks are eliminated by the use of pneumatic tyre equipment.

Secondly, the pneumatic-tired cart moves 20—25% faster than an ordinary cart. The range of the bullock cart is thus increased, and a greater earning capacity is ensured.

Thirdly, the pneumatic tyres arrest wearing off of *pucca* roads or made up farm roads. The slow speed does away with all the such and spin caused by motor lorries travelling at a high speed on *kankar* surface. The action of pneumatic tired cart is purely that of gentle consolidation.

Fourthly, the pneumatic tyres are perfect for hard surface but they are equally good for softest agricultural land. Grass, clover, sugarcane, tools are not damaged and no rents are made by the passage of wheels ; roots are not crushed when tipping.

Fifthly, though the capital cost of the heavy service pneumatic output is about Rs. 700, the ordinary carts cost about 300-400 rupees. But under normal conditions, the Heavy Service tyres are expected to last for 7-8 years. The axle, the roller, bearing hubs and the steel wheels will last for 25/30 years. Ordinary bullock cart tyres have to be written off completely at the end of 4-5 years ; the wooden wheels are gone, re-tyring is no longer worth-while and the bodies and poles are strained and cracked. In case of pneumatic tired carts, the repair is cheaper. Wheels and axle give no trouble. Wet or dry ; the cushioning effects of the rubber tyres save the body from the damage incurred by an ordinary cart under heavy loads.

Sixthly, the pneumatic tyre equipment can be easily fitted to all types of carts used in different parts of the country. It can be used economically for all forms and industrial work. It is easier on loose surfaces, quicker on good surfaces, travels well over grass and rough places and is much easier on the bullocks ; the cart body being cushioned by the tyres, suffers less from jolting.

Lastly, the transport by pneumatic tyred bullock cart is cheaper than by motor lorries and ordinary iron-tyred carts, as will be clear from the following table :—¹

Comparative Transport Cost Per 1,000 Ton Miles of Motor Truck, Ordinary Bullock Cart and Improved Type of Bullock-cart (At Maximum Efficiency).

Motor Truck (Cap. 3½ tons)		Ordinary Bullock Cart (Cap. ½ ton)		Improved Bullock Cart (Cap. 2 tons)	
Rs. a.		Rs. a.		Rs. a.	
Petrol	82. 8	Fodder	130 0	Fodder	50 0
Maintenance	15 0	Maintenance	3 0	Maintenance	0 6
Ins. Tax etc.	3 8	Tax etc.	5 4	Tax etc.	2 0
Depreciation	80 0	Depreciation	26 0	Depreciation	10 0
Driver's Pay	12 0	Driver's Pay	150 0	Driver's Pay	60 0
Total	192 0		314 4		122 6

Hence, the pneumatic tyred carts should be used very increasingly.

VII. Types of Road Surface

With regard to the type of surface required we may point out that there are usually five types of road surfaces, *viz.*, (i) the all-weather 'pucca' road with dust-proof heavy surface with bridges; (ii) the above type of road with 'crete' ways for vehicles and macadam surface for the remaining width; (iii) the 'pucca' road with macadam surface with bridges; (iv) the 'pucca' road with macadam surface partially bridged; and (v) the 'katcha' road with few bridges.

The first type of road is no doubt the best if finances permit its construction in the villages. The other types of the road cost less in the descending order. Therefore, if villages of India have to be provided with roads, they must be of the 'katcha type' which is the cheapest of all, for we cannot spend more on roads alone specially when there are many other calls on the limited sources of our country such as primary education, sanitation and agricultural development.

A feasible way in which local bodies would serve the village is the construction of what is called 'fair-weather road' in contradistinction to 'all-weather roads'. Fair-weather roads have no metalled surface and their usefulness will be greatly decreased during the rains. But as the rainy season in several parts of India does not extend beyond three months, and as the building of fair-weather roads is much less expensive, this kind of roads will be of

¹ Report of the Royal Commission on Agriculture, p. 373.

practicable immediate solution of one of the pressing problems of rural reconstruction. Their construction should be planned as part of a national road system and the ultimate objective should be to convert them into 'all-weather roads' as and when finances permit. In building 'fair-weather roads' the initiative and co-operative enterprises of the inhabitants of a village or a group of villages should be enlisted. It has been computed that if India excluding the Himalayan region and the Indian desert were as well served per square mile with public roads as Great Britain, it would require 3 million miles of roadways.

Sir Kenneth Mitchel in his presidential address to the 1943 session of Indian Road Conference remarked, "No village with a population of 1,000 and over should be more than, say, a mile or a half mile away from the public roads." The actual mileage of surfaced roads in India is only 20% of the figure.

VIII. Question of Financing of Village Roads

Unexpected difficulties have always cropped up in the financing of road development plans. "Finance is the rock on which previous road programmes have foundered." It has been claimed that the roads ought to be treated in the same way as railways. It is presumed that the total capital invested on 65,000 miles of metalled and 114,000 miles of unmetalled roads would be about Rs. 1,850 millions.

The Indian Road Development Committee appointed in 1927 under chairmanship of Mr. Jayakar remarked, "Road development in India is passing beyond the financial capacity of local governments and local bodies, and is becoming a national interest, which may to some extent be a proper charge on the central revenue." Construction of village roads will certainly increase the goods traffic of the motor buses and the railways, which would in turn fetch greater income for the Central Government, may finance bigger roads and provincial funds released thereby may be utilised for the village feeder roads. A Central Road and Fund build-up by a petrol tax surcharge was started in 1929 to help the development of roads by research and by allocation of block grants to provinces. The Royal Commission on Agriculture opined that the road development may be expedited by raising loans for financing the same. It was further stated that in view of the quasi-permanent nature of the roads, the amount required for amortisation of these loans should not be a heavy charge on the State Government resources. As regards the maintenance of the village roads, the Commission observed, "Any improvement in the condition of the village roads must depend largely, if not entirely, on the efforts of the villagers, through the Gram Panchayats, to supply the labour required not only for the construction of the new roads but also for the repair of the existing roads, more or

less at a nominal wage as a matter of social duty. Besides this revenue gathered for road development by way of petrol duty should be utilised, and there should be definite and substantial allotments for rural roads, in the State Budgets."

The Sixteenth Indian Road Congress has suggested the following principles for the guidance of road development and co-ordination policy :—

(1) Road network of each State should be an integral part of the road net work of India.

(2) All classes of roads should be regarded as of equal national importance to the national welfare and as such, one class should not be allowed to progress at the expense of another. Development should be balanced as between classes and proceed in a planned manner.

(3) Roads should not be developed ahead of the requirements of the traffic they carry or are expected to carry in the immediate future.

(4) Roads should be free to all ; there should be no toll-barriers to finance loans raised to construct large bridges and important road works. The tolls should cease as soon as the loans are repaid.

(5) Road maintenance to proper standards should have priority to construction of new roads.

(6) The road plan should be statutory with regular funds set aside by statute for road maintenance and development. Road development should not be subject to vicissitudes of temporary changes in political philosophy.

(7) Statutory provision should be made for regulation of traffic, control of ribbon development, the levy of betterment taxes on roadside lands and removal of encroachment.

Conclusion

In India today there are huge areas totally devoid of any lines of communications. There are areas with tremendous agricultural possibilities for the growing of all sorts of crops, which are now lying fallow except for the needs of the people living there. India is thus being held back while the rest of the world progresses. This situation can be changed provided rapid development of road is taken in hand-without further delay. It has been increasingly realised among all civilized nations that amongst the services on which the people rely for their daily requirements, road transport is very prominent, and therefore the provision of reasonable good roads and main highways has a relation to the activities of the people.

Central Roads Organisation

The Central Roads Organisation was created in 1930 to administer the newly constituted Central Road Fund and to advise the Government of India generally in all matters concerning roads and road development. The main functions of the Roads Organisation are : (a) to administer the Central Road Fund and to distribute it equally to the various states for works approved by the Government of India, (ii) to regulate the construction and maintenance of National Highways and to provide funds for this, (iii) to secure a balanced development of roads and road transport, and to co-ordinate them with other systems of transport, principally railway and motor transport, (iv) to collect, compile, analyse and interpret statistics covering all aspects of road development, (v) to draw up standard specifications and design for bridges and roads, (vi) to foster road research by the setting up of a Central Road Research Institute, and to co-ordinate and disseminate the results of road research work done by the various authorities and administrations in India, (vii) to improve the technical knowledge and experience of the highway engineering personnel by sponsoring the training of engineers in India and abroad, by disseminating information on standards and modern engineering techniques, and by encouraging the study of road economics and administration, (viii) to advise the State Government in the procurement and the use of road-making machinery including the fostering of their manufacture, and Text of road-rollers, in this country, (ix) to arrange for the priority and procurement of road-making materials in short supply and to assist in securing priority transport, (x) to function generally as a repository of technical statistical and administrative information on all matters concerning roads and development.

There are at present several small road research laboratories in the country. Central Road Research Institute was set up at New Delhi in 1952 co-ordinate the work of these stations, correlates results, and gives a lead in further development. The work of Central and State Road Research Institutes and Laboratories consist of (i) improving existing techniques of construction and maintenance in conformity with the requirements of the country and having regard to the nature of local materials available ; (ii) studying the local soils throughout the country by means of soil surveys, analysis, etc., with a view to evolving suitable techniques for constructing cheap types of rural roads ; (iii) studying problems of road safety and to investigate the incidence of traffic accidents and devise methods of progressive reduction.

RURAL RECONSTRUCTION

Introduction

India is predominantly an agricultural country where about 75 per cent of the population draw their subsistence from the soil. The real India lives in villages numbering about 6 lakhs and not in the cities ; and as such the problem of India necessarily consists of the solution of the problems of the villages. Casual observers are often found remarking about the progress and economic prosperity achieved by the country and argue that a concrete proof of material progress is furnished by the palatial buildings, massive macadamized roads, well-laid-out and beautiful parks and gardens, well-furnished Hospitals, schools and colleges, network of telephones, tramways, electricity and other amenities of life to be had in our cities. It is true that a few cities in India which can be easily counted on one's fingers have made considerable progress both commercially and economically during the last century under the British regime. But it is true to say that they have prospered and developed at the expense of villages. Rural interests have been from the bringing sadly neglected by the Government and almost all the revenue raised from the income of the tiller of the land has been devoted for providing facilities confined exclusively to the cities.

Besides this, combined with the various forms of exploitation that have been going on in the villages directly and indirectly the village has lost its state of self-sufficiency of olden times and is brought directly into the vortex of commercial competition and world market in which the ignorant peasant is at every step facing various sorts of difficulties. As a result of the indifferent neglect both of the Government and the statesmen, educationists and the nationalists of the country of the opportunities for the progress of rural population side by side with the urban population, the villages have reached the lowest level of destitution. The negligence has resulted in the appalling poverty and indebtedness of the peasant who toils day and night unmindful of the rigours of the extreme climates and still to remain steeped in poverty. This gloomy situation has now set the people and the Government to think hard as to how to bring about the rehabilitation of the villages. For some time past the problem of rural development has been looming large in the eyes of the public as well and it has only been lately realised that no foundation of the edifice of national regeneration can remain firm without infusing new life of hope and betterment in the mind of the villager.

Aims and Objects

Rural Uplift or Rural Reconstruction is a movement for the rehabilitation of the Indian rural life. It has a material, an intellectual and a moral aspect :

(i) Materially it seeks to improve the health and raise the standard of living of the agriculturists. The former is achieved by encouraging better sanitation and by the provision of medical aid. To realize the latter, better methods of cultivation, finance, and marketing are popularized.

(ii) As regards the mental or intellectual aspect, educational facilities are provided for the boys, girls and adults. Information and instruction are also made available through the radio, cinematograph and lectures and demonstrations by touring parties.

(iii) The moral aspect, however, is the most fundamental. It seeks to awaken the will of the villager, to make him conscious of the value of his personality and individuality. It aims at creating in him the desire for self-improvement and self-discipline by individual and collective action. The object is to free him of the inhibitions that are obstructing the way of his self-realization. It seeks to release his pent-up energies by removing defeatism, superstition, baseless fears created by centuries of depression and oppression. In a word, it seeks to change his entire outlook on life. It thus seeks to revive and develop village life as a whole in all its aspects—social, cultural, rural and economical.

The Genesis of the Movement

The various departments of the Government—Agriculture, Co-operation, Irrigation, Forest, Veterinary, Health and Medical and Education—had been trying in their own way to help the countryside in matters falling within the respective jurisdiction of each. It was found, however, that the officers of each of these departments acting more or less in water-tight compartments, were not able to produce in the villager an urge for progressive action. Too many agencies confused him and their prescriptions, sometimes conflicting, did not inspire confidence. He was not made to see his problem as a whole. He regarded them as periodic visitors, the agents of a far-off Government, who were to be welcomed, fed and given a respectful send-off. It was a case of too many cooks spoiling the broth.

It was realised, first vaguely, and during the Great Economic Depression more definitely, that if adequate and lasting results were to be achieved the village problem—which was the problem of poverty, ignorance, illiteracy, dirt, disease and general apathy—must be tackled simultaneously as one problem. The Royal Commission on Agriculture in 1928 had already expressed the view that, 'if

inertia of the centuries is to be overcome, it is essential that all the resources at the disposal of the State should be brought to bear on the problem of rural uplift and sustained effort should be made by all those departments whose activities touch the lives and surroundings of the rural population."¹

Rural Reconstruction in Different States—(I) Punjab

The credit of starting the Rural Uplift Movement on a mass and organised scale goes to Mr. F. L. Brayne (the then Deputy Commissioner of the Gurgaon district of the Punjab). He introduced there the idea of a village guide in each village, who was to act as a channel through which advice of experts in various departments would pass on to the villagers. The scheme did not produce results according to expectations. The reasons for its relative failure were pointed out by Mr. M. L. Darling : (i) There was too much of crude propaganda and too little of real teaching. In many cases the reluctant and docile villager accepted the improvements, not because he realized their value but because of the intensive propaganda with its official backing ; (ii) The details of the programme had not been carefully worked out. Little attempt was made to study the peculiar conditions of the villages and to adapt the programme to its need : (iii) The unfitness of the village guides, due to their extreme youth, for the task allotted to them was also responsible for the failure of the movement. They were very often "hurriedly selected", "insufficiently", and "inadequately" by youths, ignorant of local conditions, who could hardly command any respect or influence in the village. Thus very little of permanent value was achieved.

The Rural Reconstruction Movement gathered great momentum during the period of the Great Economic Depression. In the Punjab the services of Mr. Brayne were utilized for this purpose, and he was appointed Commissioner, Rural Reconstruction, in October, 1933. In 1935-36 the Government of India announced a grant of Rs. 1 crore for distribution to the States, to be spent on scheme of economic development and improvement of rural areas. This gave considerable stimulus to the Rural Uplift movement in the various States. The movement was, however, conducted with the greatest vigour in the Punjab under Mr. Brayne.

The programme chalked out by Mr. Brayne aimed at the following three practical steps :

1. Provision of Health

This problem included (i) the provision and utilization of waste and rubbish of all kinds and the cleaning and keeping clean and

1 *Report of the Royal Commission on Agriculture*, p. 86

2 M. L. Darling, *Rusticus Loquitor*, pp. 121-28 and 155-59

tidy of every village, compound and buildings, be it house, office, school, place of worship, residence or stable, (iv) cleanliness of person and clothes, particularly of children and the teaching and practising of clean and sanitary habits, (vii) two ventilators each for every inhabited room, (iv) complete vaccination and revaccination, (v) Control of malaria by making it impossible for mosquitoes to breed in any pool, drain hole, burrow pit, or collection of water in any building, compound or village or along the line of any public work. All depressions not used for washing or drinking purposes must be either filled, drained or treated with oil, (vi) Provision of trained *dais*.

2. Adoption of Better Farming

This included : (i) Provision of better seeds, particularly for wheat, cotton and sugarcane, (ii) More attention to the land in the shape of better implements, better methods, more ploughing, weeding, new and more profitable kinds of crops, sowing cotton in lines, control of insect pests, levelling and embanking of fields in hilly and undulating country, (iii) The improvement of cattle by making the buying and keeping of an improved bull, (iv) Control of cattle disease by segregation of cattle coming from fairs and other villages.

3. Miscellaneous Measures

These included the (i) Abandonment of the custom of boring holes in children's ears and of putting gold or silver ornaments on children, (ii) Thrift, saving and cutting down of all unnecessary and unproductive expenditure, particularly on litigation and factions, quarrels, social ceremonies, ornaments and drink, (vii) Outdoor games and healthy recreation both for children and grown-ups for improvement of health and for the occupation of spare time, (4) Girls' education, as the 'only permanent basis of all happiness and progress in town and village alike.

The means of attaining these ends were laid down as follows:—

1. Well-organised publicity for spread of the knowledge of what has to be done.

2. Better schools, provision of playgrounds and gardens, better games and physical training, insistence on the practice of cleanliness and on the teaching of health knowledge.

3. All forms of association, co-operation and otherwise, that can be used to bind the people together for their own betterment.

The work was actually done on these lines and varying success was got under different heads. But the movement was not spontaneous. Brayne admitted that "this work is being done

practically entirely by official inspiration, drive, persuasion and even order. If the government's special efforts ceased, all progress would come to a standstill and the results already achieved would come to a standstill and the results already achieved would vanish.

To quote Brayne again, "To achieve permanence properly supervised village organizations are required and to achieve spontaneity and to assist permanence, the work must be made part of the normal village life." The co-operative society, the village panchayat and the bigger landlords must create in the minds of the mass of the village the desire to improve their position. Unless that desire is created no improvement can be lasting.

The rural reconstruction work now has been transferred to the Co-operative Department in the Punjab. A special Assistant Registrar has been put in the charge of it. The work is carried on through better-living societies known here as the "Dehat Sudhar Societies."

(2) Uttar Pradesh

In U. P., the Congress Government appointed a special officer for rural reconstruction work. A Provincial Rural Development Board was created with the Heads of the nation-building departments as members. The programme is carried on by District Rural Development Associations. Rural reconstruction units consisting of 15 villages each are constituted. The work is done through the agency of better-living and better-farming societies and the panchayats. Their main activities consist of distribution of better seeds and implements, improvement in breeds of cattle, development of cottage industries, improvement of village sanitation and water supply and building of better panchayatghars.

The most important development in U. P. is the inauguration of the 'Pilot Scheme Project' at Etawah, covering 97 villages with a population of 79,000. The programme under this Pilot Scheme includes the improvement of agriculture, ravine bunding, soil conservation, animal husbandry, public health, water supply, education and recreation. The central idea of the scheme is to bring to the villager the benefit of co-ordinated service by the officers of the various development departments.

The project aims at making the services of all the departments of development available to the villager through a process of functional integration of the work of these departments. The organisation is envisaged at (a) the village level, (b) the group level, (c) the sub-station level, (d) the station level, and (e) the district level. At each level the functions at present discharged by various development departments are to be performed by a Development Agent with a qualified staff working under him. The project has had the benefit of direction of an American ex-army engineer who

has secured the co-operation of not only the official workers but also of the villagers. The main object is to increase agricultural production and improve the standard of the rural masses by creating the spirit of self-help among them.

(3) Bombay

In Bombay the Rural Reconstruction Department was first combined with the Co-operative Departments. Later the two departments were separated. Rural development was partly under the District Collector. Propaganda work was entrusted to the Agriculture and the Co-operative Departments. A Provincial Board of Rural Development was created for guidance and advice. Its membership, in addition to a few nominated non-officials, consisted of the Registrar of Co-operative Societies and the Director of Industries with the Minister in charge of Rural Development and Agriculture as chairman. Four Committees were appointed to facilitate the Board's work : (i) Agriculture and Livestock Committee, (ii) Training and Propaganda Committee, (iii) Committee for Cottage Industries, and (iv) Committee for Backward Areas. District Rural Development Boards were created to help them. The main agencies for development work are the *Taluka Development Associations*, Better Farming Societies and other co-operative agencies. Their work consists of distribution of better seeds and implements at concessional rates, improvement of cattle breeding, extension of dry farming methods, development of cottage industries, improvement in sanitation, supply of medical aid and care of backward areas and tribes.

The Bombay Government has launched a very intensive scheme for rural reconstruction with a view to promoting the furtherance of Gandhiji's constructive programme. The underlying idea of this scheme—*Sarvodaya Scheme*—is to inculcate in the villagers the spirit of self-help and mutual help. The primary responsibility for rural reconstruction under this plan rests on the *Sanchalak* (who is a reputed social and constructive worker in the area). Each *Sarvodaya* centre has an Advisory Committee nominated by the Government in consultation with the *Sanchalak* in-charge. To co-ordinate the work at the top and to give general guidance and advice, there is a Provincial *Sarvodaya* Committee whose chairman is the Revenue Minister.

The chief activities included under this scheme cover all aspects of rural life including agriculture, cottage industries, education, health and hygiene and social welfare. The *Sanchalaks* concerned choose themselves the actual times of work which is to be carried on in their respective centres. The work is generally concentrated in compact areas where either the bulk of the people belong to backward classes or where the rural economy is of a backward type. For this purpose the areas have been surveyed,

training centres for workers have been opened and the whole scheme is being worked out in co-operation with the rural population. It is hoped that this scheme, when fully implemented, will create a new life in the rural areas.

4. West Bengal

There is a separate Department of Rural Development under a Director of Rural Reconstruction. The work is carried out by the Union Boards, Village Uplift Societies and Better Living Societies. The work consists of felling jungles, repairing roads, construction of drains, distribution of quinine, clearance of water hyacinth, distribution of seed and sinking of tube-wells. In the main, rural reconstruction aims at improving living conditions, raising standard of diet, providing amusement and recreation and encouragement of cottage industries.

5. Madras

In Madras rural reconstruction activities are looked after by District Boards. The agency is the village panchayat. The main activities consist of improvement of sanitation, communication and supply. An important feature is subsidized rural dispensaries. Other activities are distribution of better seeds, better implements and construction of village godowns.

The main objective of the *Firka Development Scheme* in Madras is to stimulate initiative among the villagers to organise their economic and social life on co-operative lines with a view to make them "self-sufficient and self-reliant." This scheme was initially introduced in 34 selected Firkas containing 2,859 villages, now it has been extended to 50 Firkas. This scheme is based on the Gandhian Plan of rural reconstruction. The scheme consists of these items of work : (i) improvement of agriculture and village industries, (ii) provision of sanitation, health and housing services, (iii) the imparting of basic and adult education among the villagers and (iv) the development of Panchayats, multi-purpose societies and the Gram Seva Sangh.

Under this scheme every village is to have a Panchayat for rural administration, a multi-purpose co-operative society and a Gram Seva Sangh for channelling of public co-operation and support. These Panchayats in their turn are to be linked up with the Union Panchayats which, in their own turn are to be guided by the Firka Union. Rural Reconstruction Schemes are under the direct charge of the Collector in the district. The scheme also envisages close liaison between official and non-official workers. Each selected Firka is in charge of a Firka Development Officer who has under him Gram Sevaks with necessary subordinate staff.

6. Assam

A new scheme of rural reconstruction has been launched in Assam. The Assam Rural Reconstruction Scheme aims at a comprehensive approach to the problem of rural reconstruction through literacy and vocational education, health services, better farming, development of cottage industries, better means of transport and communication and the provision of extensive service. This scheme is administered by the Rural Development Secretariat, the Trading, Co-operative and the Primary and Rural Panchayats. Each subdivision is kept under the charge of a trained Development Officer. Each subdivision is divided into areas suitable for rural panchayat areas. The Secretary of the Primary Panchayat surveys his area and sends a report to the rural Panchayat Secretary, who prepares the 'Economic Plan' for the development of agriculture and cottage industries. A multi-purpose co-operative society is also sponsored by the Rural Panchayat for importing into their area the requisite articles and also for marketing the produce of their people. Loans are given to the farmers against their crops. Rural Development Secretariat is integrated with the Departments of Rural Development Industries, *viz.*, a Sericulture Institute, a Textile Institute and a Cottage Industries Institute and a Co-operative College.

7. Bihar

Among other States Bihar is worth mentioning in this connection. In Bihar a Rural Development Department was established in 1938. Four model centres with 20 to 30 villages each were started in each division. Intensive rural development work is carried out in them. Training is given in these centres to organisers to start work in new centres. The co-ordinating body is the Provincial Rural Development Advisory Board consisting of the heads of the nation-building departments.

Work on similar lines is being carried on in other States like Cochin, Mysore, Hyderabad, Baroda and Kashmir.

Agencies of Work—Official

The rural reconstruction, organisation and activities follow similar lines in the various States. There is a controlling agency consisting of a separate department or portion of a department. Advisory Boards are formed of the heads of the National Building Departments. There are supervising agencies which may consist of District Boards, Union Boards or Taluka Boards according to the local administrative machinery. Actual work is carried on by various kinds of co-operative societies like better farming and better living societies. In some cases village panchayats are becoming an important agency of work. Finances are provided mostly by the Government, and in some cases by panchayats also.

Non-Official

Much useful work is also being done by some non-official agencies of which the most important are the All-India Spinners' Association, the All-India Village Industries Association, both at Wardha : the Servants of India Society and the Christian Missions. Among other agencies may be mentioned Go Seva Sangh, Sriniketan at Bolepur (Bengal), Adarsh Seva Sangh, Pohri (Madhya Pradesh), Sir David Hamilton's work at Gosaba (Bengal), and the various Kisan Sabhas in the States. These organisations specialise in one aspect of the work. There are also associations which work for the uplift of the aborigines and the depressed classes, e.g., the Bhil Seva Mandal, Dohad, the Dang Seva Mandal and the Harijan Seva Sangh. These associations have done commendable work, though in some cases political motives vitiate their activities.

Results

The various organisations concerned with rural reconstruction have been doing much constructive work in connection with supply of good seeds, improved implements, improvement of breeds of cattle, encouragement of cottage industries, improved sanitation and encouragement of primary education. Their reports make a very impressive reading. There is no doubt that good work has been done in certain directions and in certain localities. But this work has not brought about any significant change in the conditions of the village and in the outlook of the villager. There are various reasons for this meagre achievement :—

Firstly, India is an enormously big country with diversities of all kinds, physical and social. The forces of conservatism and inertia are too strong to be overcome within a short period.

Secondly, the activities have not been properly planned and co-ordinated. The first stage should have been that of detailed survey and investigation of the problems and the second, creation of an all India organization to give a push and backing to the movement. The experience of different localities should have been pooled for the benefit of all. Provincial work should continue under the supervision and control of provincial bodies. But the Centre should have played a larger part in encouragement, co-ordination and finance.

Thirdly, the initiative has come from above and not from the people themselves. Training of village leaders should have received more attention. The village organs, the panchayat, the co-operative society and the school should have been assigned more active roles. The panchayat, especially, should have been made the real village executive under proper supervision of higher units like the District Board.

Finally, the rural reconstruction movement has left some of the basic problems untouched. For instance, the problem of land tenures, tenancy, land reclamation, consolidation of holdings, encouragement of co-operative farming, etc., unless these problems are tackled, no far-reaching changes can be brought about in the village life and the village standards cannot be elevated.

As agriculture constitutes the main occupation of 3/4ths of the population in India and as the problem is very diversified in character, it is not possible to tackle it in a satisfactory and successful manner at all places simultaneously because States or Central Government can hardly be expected to devote large amounts of money for financing the agricultural development schemes in all their bearings within a limited space of time.

Secondly, the piecemeal introduction of the improved methods of agriculture, or the enactment of the tenancy legislation, or the establishment of few co-operative societies or stores, or opening of a few schools, veterinary dispensaries, libraries, or the propaganda for the maternity welfare and better treatment of village sanitation in rural areas here and there, in absence of any constructive and co-ordinated rural development programme will not give any permanent relief to the poor peasants. It follows, therefore, that though the problem of rural indebtedness demands almost equal attention at every place, yet the possible course is to carry out the work of rural development in a comprehensive and systematic manner in selected units or groups of villages of about 20 to 30 villages, wherein the activities of Government Development Departments, e.g., Rural Development, Agriculture, Irrigation, Public Works, Public Health, Co-operative Organisation, Industrial and Educational Departments should be co-ordinated with a view to collaborate in the achievement of permanent beneficial results in their respective branches of administration for that selected unit.

Thirdly, in order to stabilize permanent results, it is of greatest importance that improvement should come from within and that co operation and goodwill of villagers should be harnessed by creating in them a desire to improve their own lot and that they should be taught that they themselves are ultimately responsible to improve their own condition and make their own lives better, fuller and richer by means of self and mutual help.

COMMUNITY DEVELOPMENT PROJECTS

Introduction

Since 1946, various schemes of social welfare and rural reconstruction have been carried out at Sevagram in M. P. ; Firkha Development Scheme in Madras, Sarvodaya centres in Bombay,

Etawah, Gorakhpur, Faridabad, Fyzabad and Nilokheri, etc., and the success of these undertakings encouraged the Planning Commission to devise the schemes of the Community Development Projects. Besides good results at these centres, one particular feature was lacking and that was a planning and uniform basis of action. The experiences of these centres have been nicely summed up in the First Five Year Plan, as set out below :—¹

(1) All the departments of the Central Government, *viz.*, Co-operation, Agriculture, Forest and Revenue, approached the villagers from their own aspect of work and as such could not leave a permanent impression on them of the social importance of the multifarious schemes.

(2) Various programmes were forced on the villagers and as such there was no enthusiasm amongst themselves.

(3) The schemes depended too much on the Government finances which are quite meagre.

(4) Theoretical advices need to be supplemented by practical aids and demonstrations.

(5) The programmes lacked intensive action.

(6) There should be a definite, inspiring and attractive goal for villagers which would draw their spirits to work for the improvement in their standard of living.

(7) There was a lack of initiative from the people which is very essential for the success of the scheme.

(8) The experiences of the villagers should be respected and should not be prejudicially discarded.

The Need for C. P. in India

With all these experiences in view the Planners devised this scheme under the Five Year Plan. It states that "Community Development is the method and Rural Extension the agency through which the Five Year Plan seeks to initiate a process of transformation of the social and economic life of the villagers." In the words of Mr. Losbough, "Community project is an organised, planned approach to the problem of intensive development."

The need for Community Projects arose out of the following causes :—

(i) It was essential to bring about a co-ordinated, many-sided development in the rural areas.

¹ *First Five Year Plan, 1951*, pp. 223-24.

(ii) They are needed to create initiative and to teach the villagers the importance of organised co-operative effort on the principle of self-help.

(iii) By making available to the villager the facilities of education, research and new techniques of production, moral and material development of the village life can be affected simultaneously.

(iv) They are expected to serve as models and fore-runners of rural planning.

The Meaning and Essence of C. P.

The word 'Community Project' is of American usage and used for the development work, either agricultural or otherwise, of a settlement known in U. S. A. as a Community. In India the Planning Commission has stressed the need of community organisations as "the most effective means of social betterment and the key to the successful development of social welfare programmes." The Community Development Projects as initiated by the Government of India under the Indo-U. S. A. Aid Programme owe their origin to the recommendation of the Commission. They say, "The essence of the technique is that regional groups containing a manageable number of families living in close proximity in well-defined areas are organised as democratic units co-operating for the furtherance of common interests. Community organisations should generally be created, sustained and managed by the regional community. In the first stages, such a movement may be sponsored by the State having as their main elements : (i) Community recreation and fitness programmes, (ii) fundamental education and cultural development, (iii) economic welfare through co-operatives, (iv) woman, child and family welfare, (v) environmental planning and development, (vi) youth welfare, (vii) general and social welfare activities; and effective organisation of the social and economic life of the community through co-operatives and panchayats."

Aim and Objects of C. P.

The Planning Commission has stressed that the "Central Object of the C. P. is to secure the fullest development of the material and human resources of an area". From the very beginning three aspects of this programme have been emphasised¹ :—

Firstly, National extension and C. P. are intended to be areas of intensive effort in which development agencies of the Government work together as a team in programmes which are

¹ *Second Five Year Plan*, p. 235.

planned and co-ordinated in advance, to improve all aspects of rural life.

Secondly, the essence of the approach is that villagers come together for bringing about a social change and are assisted in building up a new life for themselves and participate with increasing awareness and responsibility in the planning and implementation of projects which are material to their well-being. Self-help and co-ordination are the principles on which the movement rests.

Thirdly, the movement should bring within its scope all rural families, especially those who are 'under-privileged', and enable them to take their place in the co-operative movement and other spheres in their own right'.

Shri S. K. Dey has rightly said, "A community is distinguished in our society by the same features as we distinguish an orchard from a jungle. The jungle contains all types of vegetables but it is unplanned and in it combination of varieties is determined solely by the varieties of soil and weather. An orchard is a planned and ordered jungle and each plant develops on the principle of 'live and let live.' A community of people will have to be guided by the same basic principles and the master artist will have to apply his tools in the same pattern". At a different place, he writes, "Resources—human and natural as they stand—are adequate for the simultaneous laying of the nurseries so that the seedlings from the nurseries can be planted to take, in due course, their place left vacant on the orchard sites . . . The men and materials are already there—what is needed essentially is the breaking of the vicious circle 'this cannot be done'. It has to be replaced by 'this can be done' and shall be done'. Muscles can do it, muscles can be trained to do it and conditions can be created to do it. These three tenants of faith have, therefore, to reassert themselves and be backed by a will stronger than the thunderbolt."

The Scope of the Activities

The character of the Projects will be rural-cum-urban and the main lines of activity on the rural side will consist of :—

(i) Agriculture and rural development : reclamation of available virgin and wasteland, provision of water for agriculture, provision of good quality seeds, improved agricultural technique, veterinary aid, improved implements, marketing and credit facilities, breeding centres for animal husbandry, development of fisheries, reorganisation of dietetics, development of fruit and vegetable cultivation, soil research, and provision of manures, plantation of forests, etc.

(ii) Encouragement of cottage industries and crafts as main or subsidiary industries. Encouragement of employment through planned distribution of trade, auxiliary and welfare services.

(iii) Provision of education—compulsory and free at elementary stage—by opening high and middle schools and technical schools.

(iv) Health—Provision of sanitation and public health measures, medical aid for ailing, anti-natal care of expectant mothers.

(v) Provision of roads and encouragement of mechanical road transport services and development of animal transport.

(vi) Provision of improved techniques and designs for rural housing.

(vii) Provision of community entertainment based on local talents and culture. Organisation of local and other sports activities like *melas*, co-operative and self-help movement.

(viii) Providing refresher-courses for improving the standard of existing artisans. Training of agriculturists, artisans, supervisors, managerial personnel, health workers and extension officers.

Thus the ideal of the C. P. is to create the Welfare State where people and Government will work in co-operation to promote the objective : "the greatest well-being of the greatest number". In such a State the expenditure on the police and law courts will be reduced to the minimum. This will be achieved through extermination of the triple enemies of the society—poverty, disease and ignorance.

The development programme as initiated by the Government falls into two separate but closely interlocked parts. The first is the programme to be supervised by the Community Projects Administration, with the financial assistance provided from the Indo-U. S. A. Technical Co-operation Fund. The second part of the programme is that which is sponsored by the Ford Foundation and directly supervised by the Ministry of Food and Agriculture with financial aid from the foundation.

Location and Size

Located as far as possible in the neighbourhood of River Valley Projects, financed partly by the World Bank, the Community Projects have been divided into two main types : (a) *The Basic Type Rural Community Development Projects*: each of these consists of 300 villages with a population of 200,000 in which the primary emphasis will be on raising agricultural production with some work on public health

and sanitation, education and road building. The smaller basic development blocks consisting of 100 villages will have exactly the same programme and same emphasis on agricultural development.

(b) *Composite Type Community Development Projects.* In these, the emphasis will be laid on development of small industries as well as agricultural production and also extension of existing urban amenities to the rural areas. The plan also visualises the construction of new townships, the object being the creation of an integrated rural-cum-urban community.

Under the Community Development Programme the unit of operations is the development block which represents on an average 100 villages with a population of 60,000 to 70,000 persons spread over an area of 150 to 170 square miles. This programme has three broad features :

- (i) The Village Unit :
- (ii) Mandi Unit and
- (iii) Development Block.

(i) *A Village Unit*, on the average, will consist of 100 families or 500 persons. Each village will have two wells, or tanks for drinking water, adequate drainage facilities, agricultural extension service at the rate of one agricultural extension officer for every 5 villages, veterinary services, sanitary services through a Sanitary Inspector maintained at the block centres, arrangements to serve at least half of the agricultural land with irrigation and to keep one-third of the area of the village reserved for housing, grazing land and freshly planted, if not already existing, fuel, forests, road facilities to link every village within the project area up to maximum distance of half a mile from the village, the latter being connected by feeder roads through voluntary labour, schools for primary education of all school-going children and primary adult education and recreation centres in the open air, and centres for fisheries.

(ii) *A Mandi or Market Unit*, consisting of 25 village units, will include a middle or secondary school, a small mobile service dispensary, an agricultural expansion service, sub-headquarters, a Post and Telegraph Office, a transport service centre ; a marketing centre with godown centres ; an arts, crafts and cottage industries centre ; a shopping centre ; a community recreation centre ; a model farm with a garden and breeding service centre ; an open air dispensary for peripatetic veterinary services. For the present because of financial considerations the *Mandi Units* have been omitted.

(iii) The *Development Blocks* will consist of 4 to 5 mandis or market centres for about 100 villages. The headquarters of this block will be a kind of rural-cum-urban township of 1000 families with an approximate population of 5,000. This block is scheduled to have all the amenities now available in urban areas; *i.e.*, residential accommodation for 1,000 families including latrines; baths; waterways; electricity; a shopping centre; industries covering arts, crafts and cottage, small and medium-scale industries; a post, telegraph and telephone office; a transport service; schools; a primary health unit consisting of 15 beds equipped for mobile works in the village; administrative offices and police stations; a nursery; a veterinary hospital, and social education and community activity centre.

Urban-Cum-Rural Township or a Taluq Centre will consist of 300 villages with three D. Blocks with a population of 5 thousands. Each one of these township will have a Basic Teachers' Training College; a technical training centre; arbitration and law-courts; a tractor service and supply station; a transport workshop; an engineering workshop, a secondary hospital equipped with all accessories for all types of medical aid; a training centre for village level workers; a dairy, a poultry and agricultural experiment station including soil research laboratories. But financial difficulties have compelled the Government to leave the schemes of such townships. In its place, a *Mandi* centre under the basic rural project has been provided at the headquarters of the Block.

Organisation

Regarding the organisation of work, five different stages have been demarcated for the implementation of a C. P. The total time taken to complete is 3 years which has been extended by one year in the case of Projects started in the beginning.

Work in the first stage (Conception) consists of an intensive survey in the selected area. Detailed estimates of each item are prepared. A list of amenities to be provided is drawn up and temporary staff is selected. Headquarters are established in a nearby town. In the second stage (Initiation), arrangements are made for the start of the work. Temporary house for staff, communications in the area, agricultural extension service, recruitment of staff and the stock piling of materials is affected. Veterinary facilities, work teams and reclamation work in connection with existing wells and tanks is carried out. In the third stage (Operation) the actual process of providing amenities starts. Building of houses and roads and of new townships is carried through. The entire project area is covered in this period. In the further stage Consolidation of machinery and other facilities are shifted to other areas. Finally, in the last three months (Finalisation stage) final

touches are given to the whole scheme, the work is consolidated and the normal administrative set-up is restored.

Administrational set-up

The scheme aims at the maximum utilization of the existing machinery of the Government. For this purpose four different administrative organisations have been set-up :

(i) At the top there is a Central Organisation consisting of the members of the Planning Commission (with the P. M. as the Chairman) and four officials from the Ministries of Food and Agriculture ; Natural Resources and Scientific Research. It only formulates the policy. Actual work of direction and co-ordination is carried out by the Administrator of Community Projects, who is assisted by a special qualified staff.

(ii) Below it, there is a State Organisation, which is organised on the same lines as the Central Organisation. It consists of State Development Committee and a State Development Commissioner who acts as the executive of the administration. He is assisted by a Technical Advisory Committee and a team of experts.

(iii) Then there is the District Organisation. The District Development Officer is in charge of the direction of the programme in the district. It is his responsibility to execute C. P. and general development work by enlisting co-operation of non-officials.

(iv) Lastly, there is the Project Organisation under the Project Executive Officer who is responsible for the execution of the C. P. programme in the area. He is assisted by the Project Development Committee. Each Project Executive Officer in charge of a full project has, on his staff, at least 125 workers—supervisors and village level workers for the successful operation of the various operations.

Provision has also been made for a Programme Evaluation Organisation to evaluate and review the progress and results of the projects.

To secure the co-operation of the villages, a voluntary non-political organisation of welfare workers has been working under the presidentship of Shri Nehru and is known as '*Bharat Sevak Samaj*.' It has its branches in every State, which are sub-divided into divisional and district branches. This programme covers eight district categories in the sphere of economic and social development of the country and comprises the following activities :—

(1) *Economic Development*. Consists in (i) construction of buildings, roads, wells, bunds, houses for community purposes ; (ii)

assisting the development of co-operatives and Panchayats ;
 (iii) assisting the development of cottage and village industries ;
 (iv) savings drive and ; (v) protection of crops and cattle improvement.

(2) *Social Health.* Comprises of (i) the Anti-Corruption Campaign—(a) Pledge and to (b) help those who suffer on account of the Pledge ; (ii) Anti-Adulteration Campaign (Food and drugs)—(a) Pledge and (b) Assistance to the public in preventing adulteration.

(3) *Social Education.* (i) Training in citizenship and Health Education ; (ii) Economic Situation and Five Year Plan.

(4) *Community Recreation and National Fitness* consist of framing programmes for youth, women and children.

(5) *Health.* (i) Anti-malaria work ; (ii) Slum-clearance ; and (iii) Keep the streets clean campaign.

(6) *Studies.* (i) Corruption, (ii) Adulteration of food and drugs, (iii) Waste, and (iv) Other social problems.

(7) *Relief and Assistance.*

(8) *Resources.* National Welfare Fund.

Financial Arrangements

The resources for the projects are drawn both from the people and the Government. For each project area, the programme prescribes a qualifying scale of voluntary contribution from the people in the form of money as well as labour. Where the State offers material assistance for the execution of these projects, the expenses are to be shared by the State and Central Government, the proportion being 1 to 3 in the case of non-recurring items. However, the recurring expenses are shared equally between them. The target of expenditure on the scheme during the First Five Year Plan was Rs. 101 crores, of which the Central Government was meeting 75% of the non-recurring and 50% of the recurring expenditure. In addition, the Central Government contributed 50% of the recurring expenditure on the staff, which will continue to function even after the completion of the programme.

In this gigantic effort to transform the rural areas, India is receiving active assistance from U. S. A. and the Ford Foundation. The former has supplied equipment and other material to the value of about \$ 7.2 millions (or about Rs. 3.42 crores) for the 55 projects launched in 1952. Subsequently, the U. S. A. Government provided a further sum of \$ 5.58 million (about Rs. 2.66 crores) in two instalments.

Progress of the Work

The C. P. were launched throughout the country on 2nd October, 1952. Originally only 55 projects were selected for the start of the work, but later on more projects were launched. Each project area comprises about 200 villages, covering an area of 450 to 500 square miles with a population of about 200,000 and a cultivated area of about 150,000 acres. Besides the C. P. a less comprehensive programme called the 'National Extension Work' was launched on October 2, 1953. The target during the First Plan was the coverage of about one-fourth of the rural population under the C. P. programme and the N. E. S., thus covering a population of 7.4 crores out of a total rural population of about 31.0 crores. Since 1952, in all 1,200 development blocks have been taken up, 500 under the C. P. schemes and 900 under the N. E. S. scheme. The coverage till the 1955-56 was 7.9 crores people inhabiting 122,957 villages, divided into 1200 C. P. and N. E. S. blocks. Upto September, 1957, the number of villages and population covered was 272,756 and 150 millions respectively. The following table shows the Development Blocks taken up during the First Five Year Plan :—

	1952-53	1953-54	1954-55	1955-56	Total
<i>Development Blocks :</i>					
C. D.	247	53	—	—	300
N. E.	—	251	253	396	900
Total	247	304	253	396	1,200

<i>No. of Villages :</i>					
C. D.	25,264	7,693	—	—	32,957
N. E.	—	25,100	25,300	39,600	90,000
	25,264	32,793	25,300	39,600	122,957

<i>Population Covered (millions):</i>					
C. D.	16.4	4.0	—	—	20.4
N. E.	—	16.6	16.7	26.1	59.4
Total	16.4	20.6	16.7	26.1	79.8

The coverage is proposed to be progressively increased so that by the end of the Second Plan the entire rural India will have been brought under the scheme. During the Second Plan 3800 additional development blocks are to be taken up under the N. E. S. and of these it is expected 1120 will be converted into C. D. Blocks. The Plan provides a sum of Rs. 200 crores for implementing the programme of which Rs. 12 crores will be

contributed by the Centre and rest by the States. The following table shows the programme under the Second Plan :—

Nos. of Development Blocks

Year	N. E. S.	Conversion into C. D. Blocks,
1956-57	500	—
1957-58	650	200
1958-59	750	260
1959-60	900	300
1960-61	1,000	360
Total	3,800	1,120

The following figures highlight the achievements up to March, 1957.¹

Agriculture

Composts pits dug (000 Nos.)	20,000
Fertilisers distributed (000 mds.)	186,97
Seeds distributed (000 mds.)	8,837
Improved Implements distributed (000)	3,000
Demonstration farms started (000)	2,946
Area brought under fruits and vegetables (000 acres)	943
Pedigree Bulls supplied (000)	20
Area reclaimed (000 acres)	2,029
Additional area brought under irrigation (000 acres)	3,549

Health and Sanitation

Sockage pits constructed (000)	200
Rural Latrines constructed (000)	1,000
Wells constructed (000)	72
Wells renovated (000)	103
Drains constructed (lakh yds.)	90

Education

New schools started (000)	22
Schools converted into basic type (Nos.)	9,425
Adult education centres opened (000)	63
Adults trained (000)	1,687

People's Organisation

Community centres started (000)	155
Units of people's organisations developed (000)	110

1. *Economic Review*, Vol. IX, No. 17-19, January 15, 1958, p. 36.

New Co-operative Societies started (000)	53
No. of new members enrolled in co-operative societies (000)	2,936

Roads and Communications

Pucca roads constructed (miles)	8,814
Kutchra roads constructed (000 miles)	56
Kutchra roads improved	51

Arts and Crafts

Production- and training centres started (Nos.)	2,982
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These results have been achieved through the active participation of the people themselves. Till September 30, 1956, the value of the people's contribution in the programme by way of land, cash and labour amounted to Rs. 33 crores as against an expenditure of Rs. 56.3 crores by the Government. Till March, 1957 about 46,000 village councils and other statutory bodies and 58,000 non-statutory organisations have been set up to plan and execute the programme. As many as 76,000 A. C. C. and N. C. C. cadets have participated in the Summer Camps. Units of peoples organisation numbered 155,000.

The above table shows the design and pattern of the work that is being done. The greatest stress has been laid on Agricultural and allied matters like irrigation, and animal husbandry which are the life-blood of the nation. Under Health and Education side, there has been considerable activity in village cleansing programmes and of opening college schools.

National Extension Service

The formulation of the N. E. S. Scheme in April 1953 and its inauguration on October 2, 1953 was a major development in the sphere of rural reconstruction in India. Since the basic idea underlying both the C. P. and the N. E. S. is the same, the two have been integrated under an agency at the centre as well as in the States.

Both these schemes are being implemented simultaneously. The scope of the N. E. S., however, is relatively larger and more money is to be invested in it. The selection of the sites for the N. E. S. scheme depends on the availability of resources—both internal and external and the response of the people. For purposes of administrative convenience and efficiency the blocks are selected in such a manner that each constitutes a compact unit under the charge of a Sub-Divisional Officer or a Sub-Collector. By 1961, the entire country is to be covered by the N. E. S.

According to an official statement 75,312 villages with a rural population of 48.10 million were covered by C. D. and N. E. S. programmes during 1957-58.

Certain important conclusions may be drawn regarding achievements in development blocks.

(i) In the distribution of chemical fertilisers and in organising recreation centres and the increase under irrigation the progress is more or less satisfactory

(ii) The progress so far made in starting primary schools of the basic type, in distribution of improved seeds, in increasing the area under fruits and vegetables, in holding demonstrations, in starting new co-operative societies and in construction of wells for drinking purposes has been extremely slow. More serious and earnest efforts are needed to achieve the targets within the specified time.

(iii) The supply of implements of improved type and the supply of pedigree bulls are very inadequate and the progress so far made, in adult education, in digging and maintenance of the composts pits, sockage pits, and constructing drains is unsatisfactory.

(iv) The C. D. scheme is a sort of piecemeal planning. Hence, it will do no good to have a few patches of small cases in a vast desert.

(v) The scheme is not in the nature of spontaneous growth originating from the rural areas. It is an imposition from above, although its success is dependent in the amount of co-operation received from the local population.

(vi) C. P. have been located in areas specially selected because of assured rainfall and irrigation facilities. Success in these nature's favourite regions is no guarantee of success universally. On this account even their inspiration value is limited.

(vii) Rural development has not been conceived as the immediate good of the C. P. They are, at best, schemes of increased agricultural production and increased amenities of life.

(viii) The scheme does not attempt to redistribute the land or income in the rural areas. There is absolutely no provision for the landless agricultural labourer and the petty farmer. According to Prof. Agarwal, "The question is whether we should have a few purple patches in our countryside at a very heavy cost, or we should touch the whole countryside, though on a humbler scale."

(ix) There is too much of bureaucratisation and a tendency to ignore intelligent non-official participation and collaboration.

(x) The supply of the trained staff especially the trained Village Level Workers is greatly short of the requirements.

(xi) A *Gram Sewak* is required to look after 10 villages. This area is too large that he cannot discharge his responsibilities efficiently.

(xii) Lack of proper planning has, to a considerable extent, hindered the progress. "If the progress of the development was slow, such was not due to lack of finances but to indefiniteness in initial budgeting by officials and other causes. These budgets were prepared hastily with vague ideas and time had to be spent on asking for details before sanctioning funds for them Again, co-ordination among officials of the various departments was not there to the fullest extent. There were also delays in indenting, ordering, receiving and forwarding of equipment from the purchasing authorities to the project centres."

(xiii) The shortage of trained personnel and staff is also responsible for the slow progress of the work and various mistakes in which were made.

Suggestions for Improvement

The Third Report of the Programme Evaluation Organisation makes certain practical suggestions for improvement in the working of the programme :

(i) "For the national extension and community development programme to yield to benefits expected of it, considerable strengthening of the various technical departments is needed at all levels and in all branches. In many cases, departmental organisation at the district and field level must be improved both in numbers and quality."

(ii) "Besides a general expansion of research facilities, research units nearer the fields should be strengthened and there should be better flow of information from the field to the research unit."

(iii) "The dual control of specialists concerned with different subjects at the block level by the Block Development Officer and by technical officers at the district level is not yet working satisfactorily. Hence, to insist on the correct pattern of administrative and technical co-ordination at the State, district and block level is obviously of the highest importance for, in the next few years, the N. E. S. will have reached the entire rural population."

(iv) "Construction activities have tended to take an increasing proportion of the time of the Village Level Worker whose primary training is in agriculture and agricultural expansion and whose important duty is to promote agricultural production."

(v) "Village Panchayts should receive constant guidance and active assistance to enable them to discharge the increasing responsibilities now being placed upon them"

(vi) "In the operation of the programme there has been excessive emphasis on physical and 'financial' accomplishments—getting targets achieved, expenditure incurred, building constructed, etc., and not enough on educating the people into new ways of doing things, on making the N. E. S. an effective agency for carrying out the total programme of development and reform provided for by the State and National plans."

We, however, offer following suggestions for removing the defects, noted in the previous paragraphs :—

1. There must be a categorisation of the C. P. and N. E. S. Blocks spread out all over the country and they must be classified into three categories, *viz.* ;

- (i) Those that are working satisfactorily ;
- (ii) Those that have done tolerably well ;
- (iii) Those where progress has not been appreciable.

Suitable steps should be taken with a view to see that Projects under (ii) and (iii) are brought in line with (i) in the shortest possible time.

2. As during the Second Five Year Plan a sum of Rs. 200 crores is being allotted to carry forward the work of C. P., so that every village throughout the country may have the benefit of this scheme, it would be in fitness of the things if a separate Ministry is formed to tackle this onerous and stupendous task. The C. P. by itself is a vast subject and the Minister in charge of it should be able to devote his undivided attention to it. The present arrangement needs modification.¹

3. It is absolutely necessary that a further extension of time should be given to all these Projects, which were inaugurated in 1953 especially those where expectations have not been fulfilled. To let them alone, on the expiry of the term, would be tantamount to nullifying the work already done and wasting the money so far spent.

4. Greater attention should be bestowed on the selection of the personnel from top to bottom and their training, so that they may bring a missionary spirit to their work. Every possible effort should be made to see that those who are called upon to undertake this work, do not regard it a matter of routine nature, but something sacred with which the making of the future of the country intimately bound up.

5. The time has come when we should see that greater and more effective, intelligent, non-official association with this work is

¹ Such a Ministry has now been set up at the Centre with Shri Dey as the Minister-in-Charge.

ensured. The C. P. work should not be entirely left to official agency, initiative and guidance. Non-official association and co-operation must be encouraged and they should not be permitted to labour under the impression that however sound their advice, it stands the risk of being ignored by those who happen to be in virtual control of these projects.

6. Having regard to the great importance of the work and its repercussions on the future welfare of the great mass of the people in the countryside specially during the Second Five Year Plan period, the future programme should be reoriented.

7. A regular crusade be made to infuse a spirit of plan-mindedness in the village people touched by this programme so as to see that not only their action and spontaneous co-operation and association with the work now in progress is assured, but also that on the term of expiry of these projects, they will see to it that work is carried on, on their own accord. Our objective should be to see that by the end of the Second Five Year Plan, every village in the entire country wears a new look and is imbued with a spirit of enterprise and ambition.

8. The success of the activities in any Development Block should be judged by the following tests :—

(i) The extent to which the people in the block carry their activities jointly in a co-operative spirit.

(ii) The extent to which the cottage industries in the block have been developed to give work to all those who are in need of work.

(iii) The extent to which the wealth of the people living in the local area has increased and equitably distributed.

(iv) When at least one village in each block is made a model village satisfying these conditions :

(a) Each house in the village is properly ventilated and is kept neat and clean, has small vegetable garden attached to it, proper drains and soakage pits, a smokeless *chulha* and a moving latrine.

(b) All the lanes and bylanes and roads leading to and from the village are made *pacca*.

(c) There is adequate provision for the supply of good drinking water, proper medical facilities for the people as well as the cattle of the village.

(d) The land of the village is utilised in such a way as to give a maximum return.

(e) All the adult people of the village are literate and there is adequate provision for the education of children.

CHAPTER 34

VILLAGE PANCHAYATS

India has been a land of village communities or Gram Panchayats from times immemorial. This institution of local-self Government and village communities was also practised in different countries of Europe and Asia.¹ The Great City States in Europe enjoyed direct local autonomy. For the Greeks, the City was a 'life in common.' The City State "was at once a Parliament and a Government, an Executive, Legislature and Judiciary in one."² A good account of the co-operative life practised in village communities in Europe is given by Prince Kropotkin. In the words of Kropotkin, "the village community was not only a union for guaranteeing to each his fair share in the common land, but also a union for common culture, for mutual support in all possible forms, for protection from violence, and for a further development of knowledge, national bonds, and moral conceptions, and every change in the judicial, military, educational or economical manners had to be decided by the folkmates of the village, the tribe or the confederation. The community being a continuation of the gens, it inherited all its functions."³ China and Japan have also been some of the oldest homes of such decentralised rural institutions. Says Lin Yutang, "The family system and the village system, which is the family raised to a higher exponent, account for all there is to explain in the Chinese social life."⁴ "The village system when relatively devoid of graft and corruption, was probably as effective and well balanced a system of organising and controlling a large-scale, highly decentralised system as the world has ever seen.....The family was the basic unit in terms of which the economic aspects of life were carried out . . . Was self-sufficient in production and consumption to a degree that is difficult for persons from highly industrialised societies to understand. They produced most of what they consumed, and consumed most of what they produced."⁵ In Russia, according to Maine, "villages are not fortuitous assemblages of men, nor are they unions unfounded on contract, they are naturally organised communities like those of India. The token of an extreme antiquity are discernible in almost every single feature of Indian village communities."⁶ The

1 Report of the Congress Village Panchayat Committee, 1954, p. 9.

2 Lord Bryce, *The Democratic Process*, pp. 249-50.

3 P. Kropotkin, *Mutual Aid*, 1939, p. 110.

4 Lin Yutang, *My Country and My People*, 1936, pp. 167.

5 M. C. Levy, *Economic Development and Cultural Change*, Vol. II, No. 3 (1953), p. 165.

6 H. Maine, *Ancient Law*, p. 266.

Russian Mirs are comparable in some way to the India village community¹ The Mediaeval guilds of Europe were in the same current of mutual aid and support which was seen at work in the village community.²

We can be proud of the fact that the institution of Village Panchayat was "developed earliest and preserved longest in India among all the countries of the earth." It is believed that the system was first introduced by King Prithu while colonizing the Doab between the Ganga and Jamuna. In fact, the village in India had been looked upon as the basic unit of administration as early as the Vedic Age. *Gramini* or the leader of the village is mentioned in the *Rigveda*. There are definite references to the existence of 'Gram Sanghas' in the *Shantiparva* of the *Mahabharat* and *Manu Smriti*. References to the Gram Sabhas or local village assemblies are found in the *Jatakas* also. *Shreni* was a well-known term for the merchant guilds. *Kautilya*, who lived in 400 B. C. had also described these village communities in his *Arthashastra*. In the *Valmiki Ramayana*, we hear of *Janpada*, which was a kind of federation of the numerous village republics. It is also certain that the system was widely in existence in this country at the time of greek invasion, and Megasthenes has left vivid impression of these '*Pentdas*', as he termed the Panchayats. Chinese travellers Hsien Tsang and Fa Hien tell us how India at the time of their visits was very productive and the people were "flourishing and happy beyond compare." An account of these Panchayats during the 7th century is provided in Shukracharya's *Nitisara*. According to him, "Village was a composite whole and it provided a composite leadership for management of village affairs. There were six kinds of village leaders—(i) The *Sahasadhipati* or *Danda-Vidhayak* to punish the wrong doer, (ii) the *gramap* or *Gram neta* to protect the village folk from thieves, dacoits and Government officials; (iii) the *Bhaghar* to collect land revenue; (iv) the *Lekhak* to collect taxes from traders; (v) the *Shukla-grahak* to maintain records and village accounts; and (vi) the *Pratihara* to summon people before these village leaders. The *Dharam sutras* and the *Shastras* contain references to *Gana* and *Puga*, both of which denote some kind of village or town corporations. Archaeological findings also confirm the view that the system of village Panchayats was prevalent in India through the centuries. These institutions continued to flourish during the Hindu, Muslim and Maratha Governments till the advent of the East India Company. They survived the wreck of dynasties and downfall of Empires."³ "The independent development of local Government provided

1 J. Nehru, *Discovery of India*, 1956, p. 289.

2 P. Kropotkin, *Op. Cit.*, p. 136.

3 S. N. Agarwal, *Gandhian Constitution for Free India*.

like the shell of the tortoise a heaven of peace where the national culture could draw in for its own safety when political storms burst over the land."¹ So said Mahatma Gandhi, "Long ago, how long history does not record, the Indian genius worked out the village and local Panchayat. It remained our forte through many a turbulent period. Kings and dynasties fought and failed, Empires rose, ruled, misruled and disappeared, but the villager's life maintained its even tenor, away from the din of battle and the rush of rising and falling Empires. We had a village State which protected his life and property made civilised life possible."²

Even the Committee of the Secretary of E. I. Co., reported in 1812, "Vender this simple form of Municipal Governments, the inhabitants of the country have lived from times immemorial . . . The inhabitants give themselves no trouble about the breaking up and division of kingdoms ; while the village remains entire, they care not to what power it is transferred or to what sovereign it devolves ; its internal economy remains unchanged." Observed Sir Charles Trevellyn, "One foreign conquerer after another has swept over India but the village municipalities have stuck to the soil like their own *kusha grass*." "Scythian, Greek, Saracen, Afghan, Mongol and others have come down from the mountains ; and Portuguese, Dutch, French, English and Dane out of its seas and set up their successive dominations in the land but the religious trade union villages have remained as little affected by their coming and going as a rock by the rising and falling of the tide."³

In his famous minute, wrote Sir Charles Metcalfe (the then Acting Governor-General of India) thus : "The Village Communities are little republics, having nearly everything they can want within themselves, and almost independent of any foreign relations. Dynasty after dynasty tumbles down ; revolution succeeds revolution ; but the village community remains the same. They seem to last where nothing else lasts. The union of the village communities, each one forming a separate little state in itself, has, I believe, contributed more than any other cause to the preservation of the people of India through all revolutions and changes which they have suffered, and it is in high degree conducive to their happiness and to the enjoyment of a great portion of freedom and independence. I wish, therefore, that the village constitution may never be disturbed and I dread everything that has a tendency to break them up."⁴

1 R. K. Mukerjee ; *Local Government in Ancient India* p. 10.

2 Mahatma Gandhi, '*Panchayats and Its Judicial Aspect*,' in *Harijan*, dated 8th December, 1946.

3 *Industrial Arts of India*, p. 320.

4 Report, *Select Committee of House of Commons*, 1832.

It is interesting to note that the attention of Karl Marx was also drawn by these Indian Village Republics. He writes in his *Das Capital*, "The small and extremely ancient Indian communities which still exist to some extent, are based upon the communal ownership of the land, upon a direct linking up of manual agriculture and handicraft and upon a fixed form of the division of labour which is adopted as a cut and dried scheme whenever new communities are founded. They constitute self-sufficient productive entities, the area of land upon which production is carried on ranging from a hundred to several thousand acres. The greater part of the product is produced for the satisfaction of the immediate needs of the community, not as commodities; and production itself is, therefore, independent of the division of labour which the exchange of commodities has brought about in Indian society as well. . . . In different regions of India we find different forms of such communities. In the simplest form the land is commonly tilled and its produce is divided among the members of the community, while every family carries on spinning, weaving, as an accessory occupation. The simplicity of the productive organism in these self-sufficient communities. . . . unlocks for us the mystery of the unchangeableness of Asiatic society, which contrasts so strongly with the perpetual dissolutions and reconstruction of Asiatic states, and with the unceasing changes of dynasties. The structure of the economic elements of the society remains unaffected by the storms in the political weather."¹

Sir Henry Maine points out, "Indian village community was a living and not dead institution and the Indian and the ancient European systems of village communities were, in all essential particulars, identical."² Dr. Altekar has opined, "From ancient most times, villages in India have been the axle of administration." The position of towns in ancient Indian life was negligible.³

The village communities in India grew out of the unsettled and incoherent conditions of early tribes and their forms of social organisation. These bodies came into existence the earliest, and even at this early stage developed a high degree of organised functioning, and came to be the real base upon which great ancient culture grew and prospered.⁴

The Indian villages had evolved a well-balanced social, economic and political system by eschewing the two extremes of *laissez faire* and totalitarian control. They had developed an ideal form of co-operative agriculture and industry in which there was hardly any scope for spoilation of the poor by the rich. As

1 Marx, *Capital*, pp. 357-358.

2 H. Maine, *Village Communities in East and West*.

3 S. A. Altekar, *Pracheen Bhartiya Shashan Padhati*, p. 168.

4 H. D. Malviya, *Village Panchayats in India*, 1956, pp. 77-78.

Gandhiji has put it, "The production was almost simultaneous with consumption and distribution," and the vicious circle of money-lender economy was conspicuous by its absence. Production was for the immediate use and not for distant markets. The whole social structure was founded on non-violence and fellow-feeling. The Gram Panchayats administered the village affairs either on its own responsibility or as an adjunct to the village headman or Patel. It also administered justice and peace, maintained local order by watch and ward, provided facilities for education, and public works such as erection and maintenance of public buildings, roads, tanks, wells and the keeping of village tracts in order and providing all other common amenities, social and economic of the village life and collected and distributed the charity to the needy and the poor. It derived its finances from the rich and wealthy inhabitants of the village and from other donations. The labour for the works of public utility the village community could get from the village people. In this way it was self-sufficient and self-supporting having little to do with the outside world. In the past, indeed, these Panchayats played a very useful role in developing the village corporate life but unfortunately the advent of the British rule in India led to their decay and disappearance.

Causes of Decay

An extreme anxiety to enhance the land revenue to its utmost limits induced the East India Company to make direct arrangements with every individual cultivator, instead of with village community as a whole. An equally unreasonable anxiety to centralise all judicial and executive powers in their own hands led the British administrators to virtually set aside the village functionaries and thus deprive them of their age-long powers. These republics, therefore, fell into decay. This decay was further helped by a number of other factors.

The administration of the village by the agencies of the Central Government, the extension of the jurisdiction of the modern, civil and criminal courts of the towns, new land revenue system, increase in the means of communication, progress of education, police administration, migration of the best and ablest persons from the villages to the towns and the growing spirit of individualism and the break-up of the joint family system led to the decay and disintegration of so important an institution like the panchayats. Thus the self-sufficient nature of the old quasi-democratic rural policy was broken and consequently the village panchayats as a rural institution sank into insignificance. As R. C. Dutta remarks, "One of the saddest results of British rule in India is the effacement of that system of village self-government which was developed earliest and preserved longest in India amongst all the countries of the earth."

Early Pauchayat Legislation

Gradually the British Government took steps to establish such local bodies as could look after their own affairs. This led to the enactment of various Acts between 1842 and 1862 resulting in the setting up of the Municipalities in the towns but no serious attempts were made to reorganise or newly start the village Institutions. Later on with the systematic attempts and sympathetic attitude of Lord Ripon, Local Self-Government Acts were put on the statute Book in Madras and Bengal in 1884 and 1885 respectively. The Madras Act laid down the following as the duties of the Union Panchayats :—

(i) Lighting of public roads ; (ii) cleaning of public roads, drains, tanks and wells ; (iii) the establishment and maintenance of hospitals, dispensaries and schools ; (iv) making and repairing of public roads and drains : (v) supply of water for domestic purposes and (vi) preservation of public health. In Madras between 1889-90 to 1902-03 the number of Union Panchayats increased from 248 to 397.

The Bengal Act also entrusted to the village unions the management of cattle compounds and the control of registration of statistics. In 1902-03 there were 57 unions in Bengal.

“The Old Panchayats were informal affairs, not statutorily created but working on the basis of free will of the villagers. It met freely where and when it liked, was ignorant of the blessedness of odd numbers and decisions by majority, and was not accustomed to seeing its decision annulled by a petition sent over the heads of its members. Apparently oblivious of these failures and in their enthusiasm to lead on natives to self-rule, the British rulers passed orders and Acts for the development of self-governing institutions in the villages.”¹

The Royal Commission on Decentralisation (1907)

In 1896 and 1897, the Government of India adopted resolutions on Local Self-Government, but these completely ignored the villages. However, in 1907-8 the entire subject of the Local Self Government was considered by a Royal Commission on Decentralisation appointed by Edward VII. The Commission recognised that “throughout the greater part of India the village constitutes the primary territorial unit of Government organisation, and from the villages are built up larger administrative entities.”² The Report said, “These villages formerly possessed a large degree of

1 H. D. Malviya, *Village Panchayats in India*, 1956, p. 220.

2 Report of the Royal Commission on Decentralisation in India, Vol. I, 1909, p. 236.

autonomy but this autonomy has now disappeared owing to the establishment of local, civil and criminal courts, the present revenue and police organisation, the increase of communication, the growth of individualism, the progress of education, and the operation of the individual *raiwalwari* system which is extending even in the north of India. Nevertheless the village remains the first unit of administration, the principal village functionaries the headman, the accountant and the village watchman--are largely utilised and paid by the Government and there is still a certain amount of common village feeling and interests."¹

The commission recommended that it would be desirable to constitute Village Panchayats for the administration of local village affairs. It further added that "the foundation of any stable edifice which shall associate the people with the administration must be the village, in which people are known to one another and have interests which converge on definite and well-recognised objects like water supply and sanitation."² It visualised certain difficulties in the success of such an effort, like caste and religious disputes and factions so common in village life, or, in large estates the influence of the landlord which may prevent free action by the tenantry. It agreed that these difficulties are not insurmountable, and advised a gradual and cautious approach beginning from those villages in which circumstances are most favourable by reason of homogeneity.

The Commission recommended the membership of five with local variations, of which the village headman should be the *ex officio* chairman. It recommended that the Panchayats should have these functions :—

(i) Civil and Criminal Jurisdiction of petty cases ; (ii) Village sanitation and expenditure on certain minor works ; (iii) Construction and maintenance of school houses and some local control in respect to school management ; (iv) Selected Panchayats to be given the management of small fuel and fodder reserves ; (v) Management of village cattle pound and of markets of purely local importance.

The Commission also recommended that the work of Panchayat should be free from interference by the lower Government subordinates.

It also recommended that Panchayats should not be placed under District or Sub-District Boards. All matters relating to the appointment and removal of village officers should be dealt with

¹ *Ibid.*, p. 237.

² *Ibid.*, p. 239.

by the S. D. O. and there should be no appeal from his orders beyond the collector.

The Commission suggested that the Panchayats should not involve fresh taxation. Its revenue should be derived from these sources :—

(i) Special grants, for particular objects of local improvement, to be made by the Sub-District Boards; (ii) The assignment to it of a portion of the land cess levied for local board purposes in the village; (iii) The receipts from village cattle pounds or markets which may be entrusted to its management; and (iv) Small fees on civil suits filed before it.

Half-hearted Implementation

The recommendations were implemented in a half-hearted manner. However, the Government, issued a resolution on the Local-Self-Government, in May, 1915 indicating the following general principles :—

(i) The experiments should be made in selected villages or areas larger than a village, where people in general agree.

(ii) Legislation, where necessary, should be permissive and general. The powers and duties of the Panchayats—whether administrative or judicial—need not be identical in every village.

(iii) In areas where it is considered desirable to confer judicial as well as administrative functions on Panchayats the same body should exercise same functions.

(iv) Existing Village Administrative Committees—such as Village Sanitation and Education Committee should be merged in the village Panchayats where these are established.

(v) The jurisdiction of Panchayats in judicial cases should ordinarily be permissive, but in order to provide inducement to litigants reasonable facilities might be allowed to persons wishing to have their cases decided by the Panchayats—Court-fees, if levied, should be small, technicalities in procedure should be avoided and possibly a speedier execution of decrees permitted.

(vi) Powers of permissive taxation may be conferred on Panchayats, subjects to the control of the local Government, but the development of the Panchayat system should not be prejudiced by an excessive association with taxation.

Montague-Chelmsford Reforms and After

With the transference of powers to the Local Self-Governments, following the Montague-Chelmsford Reforms in 1919—a number of legislation on Village Panchayats were passed. Thus, there were passed the Madras Panchayat Act XV of 1920; the Bombay Village Panchayat Act IX of 1920; the Bengal Self-Government Act V of 1919; the U. P. Panchayat Act VI of 1920, the Punjab Panchayat Act III of 1922; the Bihar Self-Government Act V of 1920; the M. P. Panchayat Act V of 1920; and the Assam Self-Government Act of 1925. Some princely States also enacted legislations in this direction in subsequent years. Thus were passed the Village Panchayat Acts in Mysore (1926), Baroda (1926), Indore (1920) Cochin (1919), Bikaner (1928).

Panchayats After Independence

Since then Village Panchayats have been established in nearly all the States. When India achieved Independence, a Draft Constitution was prepared but it discarded the village and adopted the individual as its unit. Therefore, this Constitution was criticised by a number of eminent authorities and the Press, accordingly amendments were made in the Constitution. "The State shall take steps to organise Village Panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-Government. The incorporation of the Panchayat idea in the Indian Constitution was hailed all over the country as an event of profound importance pregnant with great and far-reaching consequences on the very structure of the State.

Even before the Constitutional Directives, many State Governments had independently taken steps to enact Panchayat legislation. U. P. was the first State to legislate in 1948 followed by Bombay and Madras. In subsequent years, all State Governments have enacted Panchayat Legislations, and Village Panchayats have sprang up in villages all over India. The following table gives an idea of the number of Panchayats functioning in important States :—¹

1 H. D. Malviya, *Village Panchayats in India*, pp. 270-271 & Bharat Jyoti.

Progress in Establishing Panchayats

Name of the State	Total No. of villages	No. of Panchayats established upto March 1951	No. of Panchayats established upto March 1956	No. of villages covered by Panchayats by March 1954
Andhra	15,500	3,753	6,478	4,168
Assam	25,327	28 Rural Panchayats 135 Primary Panchayats	1,662	3,620
Bihar	71,378	1,424	7,936	22,000
Bombay	38,665	4,223	7,640	7,761
Madhya Pradesh	64,271	5,731	9,699	11,032
Madras	19,703	4,386	6,369	7,000
Orissa	48,398	532	2,337	28,427
Punjab	21,573	...	9,194	20,474
Uttar Pradesh	1,24,323	35,919	36,139	1,24,323
West Bengal	35,603	Cannot be furnished	...	650
Mysore	16,439	12,606	12,756	16,439
Rajasthan	32,040	2,475	3,276	19,946
Travancore-Cochin	1,008	281	547	711
Jammu and Kashmir	8,740 (1941 census)	540	...	4,774
Delhi	360	...	74	203
Himachal Pradesh	14,126	315	426	...
Vindhya Pradesh	12,881	Nil	1,806	4,032
Total for India	5,81,814	83,093	98,256	2,94,460

50.61% Villages are covered by Panchayats.

It will be noted from this table that by March 1954, All States except Bengal, Ajmer, Bhopal, H. P., V. P. had enacted Panchayat legislations. The State Government had by the end of 1953 created a separate Department of Gram Panchayats, attached generally to the Department of Local Self-Government Bihar, Punjab, U. P., Hyderabad, Pepsu, Rajasthan and T. C. had this arrangements. In U. P. the Development Commissioner was the *ex-Officio* Director of Panchayats. In Madras and Andhra the Inspector of Municipal Councils and Local Boards control and supervise the Panchayats. In M. P. the Director of Social Welfare dealt with Panchayats. In M. B., V. P., and H. P. Co-operatives and Panchayat Departments had been combined. In Bombay, the administration of Panchayats at the State level was responsibility of Local Self-Government and the Public Health Department. In Orissa, a member of the Board of Revenue dealt with the Panchayat organisation.

Generally speaking, the main functions of the organisation at the State level is to administer the State Panchayat Raj Act, arrange for the formation of Panchayats, control the expenditure of Panchayats, and control and supervise the work of the field staff and arrange for the training of Panchayat staff. In some States, the Department has also the responsibility for distribution of grants to Panchayats and for administering self-help activities.

Each State has a field staff, generally at the district level and sometimes also at the Divisional Tehsil or Police Station level. Except in Mysore, Pepsu, Travancore-Cochin and Coorg, the Panchayats in rest of the States are generally served by the full-time or part-time Panchayat Secretaries. The State Governments help in every possible way to the Panchayats, e.g., U. P. Government gives a grant to cover the pay of Panchayat Secretaries. In Bombay, the Government pays $\frac{1}{4}$ th of the salaries and allowances of the Secretaries. In Madras, dearness allowance subsidy is given for the establishment of Panchayats. In Orissa, a grant for the maintenance and sanitation staff is given. Besides, the Government of Bihar, M. P., Orissa, U. P. Rajasthan, V. P., and H. P. make small initial non-recurring grants (ranging from Rs. 50 to Rs. 200) for the setting up of Panchayats for stationery or furniture. The Madras Government also gives grants for village communications, for covering school teacher's pays, for school building; and it also gives surcharge on stamp duty on transfer of property as well as grant for entertainment taxes to the Panchayats. In Orissa, the Government gives grants for the maintenance of roads and execution of village development work. The Punjab Government gives grants for the libraries and sanitation. The U. P. Government gives self-help grants. The Rajasthan Government gives grant for public utility works, for Panchayat-ghars, maintenance of libraries, reading rooms, lighting, sanitations and repairs of roads. Other Governments also give grants-in-aid for various purposes.

Pattern of Panchayat Organisation

The pattern of Village Panchayats varies from State to State. In a number of States, Gaon Sabhas or Gram Sabhas have been established in every village serving a population of 1,000 or more. In areas where there are no villages within 3 miles radius of a particular village, a separate Gaon Sabha is established for such a village even though the population of that village is less than 1,000. If the villages are close by, they are combined to form only one Panchayat, even if the population is above 5,000, *e.g.*, there is a Gaon Sabha in every village or group of villages with a population of 1,000 in U. P. of which all the adult members residing in an area are life-time members. There are about 56,139 Gaon Sabhas in U. P., while in Madras Panchayats are to be formed for every revenue village of grant of villages with a population of 1,000. Here two kinds of Panchayat are formed—Class I in villages with a population of 5,000 and an estimated revenue of Rs. 10,000. In M. P. formation of Panchayats is split up into three stages. First for every village with a population of 1,000; second for villages with a population between 500 and 1,000 and third, for villages with a population below 500. The principle adopted is one Panchayat for one village. In Bombay it is obligatory on the Government to establish Village Panchayats with a population of 2,000 and above. For this purpose two or three villages may be combined. There is no Panchayat for villages with a population of less than 1,000. In Punjab Panchayats are formed for a village or group of villages with a population of 500. In Bihar Panchayats are formed for a village or groups of villages with a population of 4,000 in the Northern and Southern districts and 2,500 in the Chota Nagpur region. In Bengal Panchayats are formed in villages with a population between 500 and 10,000, whereas in Orissa they are established in compact, selected areas with a population ranging from 5,000 to 10,000. In Mysore Panchayats are established in a village or group of villages with a population between 2,000 and 5,000 in Rajasthan the limit is a population of 5000.

In certain other States, the Panchayat Raj is administered in two or three tiers, *viz.* Gram Panchayat, Kendra Panchayat and Mandal Panchayat. At the lowest level the primary Panchayats or Gram Panchayats are given certain municipal functions. Kendra Panchayats (or the combination of a certain number of Gram Panchayats) is given certain administrative functions as well; and the Mandal Panchayats (which combines a few Kendra Panchayats) is given such functions as management of schools, dispensaries, hospitals.

In still certain other States, Nyaya or Adalti (Judicial) Panchayats are established by combining a few Gram Panchayats and establishing one Court for all of them. In some other States, the

State Government specifies the local limits and jurisdiction of each Gram Sabha or the Panchayat, while in others Panchayats which cater for a population of more than a thousand are divided into Wards. Panchayats have as many as five or six wards and cater for a population of 5 to 6 thousand persons.

The System of Elections

Election to the village bodies is direct and based on adult franchise by show of hands. The executive body of the Gaon Sabha constitutes the Gaon Panchayat. The number of members ranges from 30 to 51. Seats are reserved for the minority community and scheduled castes. Seats are allotted to each constituency in proportion to its population. In Madras elections to class I Panchayats are held by secret ballot based on adult franchise, while to class II are held by show of hands. In Bombay the Panches are elected through secret ballot based on adult franchise. The area of the Village Panchayats is divided into wards each of which elects one or more members. If the required number is not returned within 8 weeks, the Standing Committee of the District Board will appoint the required number of persons. The Sarpanch is elected by members from among their own number. In Punjab, too the election is held by secret ballot and the number of Panches varies from 5 to 9. Sarpanch is elected by the Panches. While in Bihar, the *Mukhiya* is elected without contest, and Panches are elected by secret ballot. The executive Committee is nominated by the *Mukhiya*. The number varies between 7 and 15. In West Bengal, the Panches are elected at a general meeting of voters by show of hands. In Orissa all Panchayats are formed on the basis of adult franchise and members are elected by secret ballot. The *Sarpanch* is elected by the Panches. In Mysore the members are elected on the basis of adult franchise either by secret ballot or by show of hands. Members below 25 years of age cannot contest election. The number of members of a Panchayat varies from 10 and 20 in proportion to the population of the unit. In Rajasthan elections are held on the basis of adult suffrage by show of hands. Panchayat circle is divided into wards and each ward returns one member. The Sarpanch is elected by the entire electorate of the village.

Unit of Panchayat Organisation

The Local Self-Government Ministers' Conference, 1954, considered the question whether the unit of Panchayat organisation should be one revenue village or it should be more than one revenue village, and it came to the conclusion that "success in a programme is likely to be greater if it is recognised that different sections of the people can contribute to it. The primary social

and economic unit is the family, and the strength of this unit will be enhanced and its effectiveness in promoting self-help increased if a programme takes account of all its members, and not simply of the head of the house-hold." In view of this and in view of the need to work and plan on the basis of the felt needs of the village community, it is necessary to have 'one-village' Panchayats. Local initiative can be developed only on the basis of 'one-village' bodies. In case there are very small villages adjacently situated with populations of less than 300 or 400, they may be combined together. But single revenue villages of 1,500-2,000 population should be the Village Panchayat Unit.

Shri S. N. Agarwal suggests that over the Village Panchayats should be Taluka Panchayats. He advocates the break up of the existing Talukas into smaller units with about 20 villages and a population of 20,000. The Presidents of Village Panchayats should be members of the Taluka Panchayats, whose Presidents in turn will constitute the District Panchayat and so on to the Provincial and All-India Panchayats. He further says "The administrative system envisaged in this constitution is that of a pyramid whose broad-base is composed of memberless village communities of the country. The higher Panchayats shall tender sound advice, give expert guidance and information, supervise and co-ordinate the activities of the Village Panchayats with a view to increasing the efficiency of administration and public service. It will be the basic unit that would dictate to the centre and not *vice versa*. The whole system will be turned upside down; the village shall become the real and moving unit of the administration."¹

Functions of Village Panchayats

The functions of Panchayats are both obligatory and discretionary as well compulsory and optional, *e.g.*, in U. P., Bombay, Bihar, Orissa, Mysore and Rajasthan, the Panchayats have to perform these: (i) *obligatory functions*—opening and maintenance of burial grounds, maintenance and improvement of public streets and drains lighting, medical relief taking curative and preventive measures in epidemics; maintenance and construction of public latrines; registration of births and deaths, sanitation and conservancy, organisation of Melas and fairs and management and care of common grazing grounds, provision of primary education; water supply; (ii) *Discretionary functions*, plantation of trees, improving the breed of cattle, organisation of Village Volunteer Force for watch and ward of the village and the crops; development of co-operation, promotion and improvement

1 S. N. Agarwal, *Gandhian Constitution for Free India*.

of cottage industries, relief against famine, construction of new bridges, dharamshalas and culverts, wells and ponds ; improvement in sanitation veterinary and medical facilities, maintaining libraries and reading rooms ; establishment and maintenance of child welfare centres ; control and management of village forests ; organisation, supervision and control of rural development or multi-purpose co-operative societies ; filling in of insanitary pits, establishment of improved seed and implement stores, maintenance of stud-bulls, schools and hospitals, crop experiments ; (iii) They also collect taxes, cesses, fees and other dues for the Government ; regulate dangerous trades and practices, organise recreational and social functions and take up any other work of public utility.

From the foregoing description it will be seen that the functions of the panchayats are of two kinds, administrative and judiciary. The administrative powers relate to the village lanes, ponds, wells, drainage, epidemic protection through vaccination, maintenance of school buildings, night watch, etc. Occasionally they may also arrange for lighting, libraries, improvement of agriculture and handicrafts, organising festivals, and management of travellers' rest-houses. Thus they do useful work particularly in respect of education, health, conservancy and public works. They have been of special service for maintaining dispensaries of villagers in Bengal, for supplying electricity and for enforcing Town Planning Act in rural parts of Madras, for spreading adult education in U. P., M. P., and Assam ; for introducing agricultural improvements in the Punjab and Mysore and giving effect to social legislation such as the Marriage Registration Act, the Marriage Expenses Controlling Act in Madhya Pradesh

Judicial Functions and Nyaya Panchayats

Besides these functions, some of the Village Panchayats have also been entrusted with judicial powers. These relate to the trial of civil suits for money due on contracts, recovery of movable property or its value. In Bombay, the Nyaya Panchayats can try cases for the recovery of money dues on contract not exceeding the value of Rs. 100, suits for compensation for wrongfully taking and injuring movable property. It can also fine upto Rs. 40 but cannot pass an order for imprisonment. In M. P. they can entertain civil suits of the value of Rs. 100 but can admit cases upto Rs. 500 with the consent of both the parties to a dispute. They can also try criminal cases and impose a fine of Rs. 50. In Madras, the pecuniary jurisdiction is Rs. 100, and fines can be imposed for various offences which range upto Rs. 500. In U. P. Panchayati Adalat can try some specific criminal cases and civil suits and can impose fine upto Rs. 100. In the Punjab Gram Panchayats acting as Nyaya Panchayats can exercise judicial functions both civil and

criminal. The pecuniary limit is fixed to Rs 200 and the limit of the fine is Rs. 100. In Bihar, the fine can be imposed upto Rs. 50 in case of theft and upto Rs. 100 in case of civil disputes. In Rajasthan there are no separate Nyaya Panchayats, but Gram Panchayats carry on the judicial function also.

The Panchayat Committee of the Local Self-Government Ministers' Conference, 1954, recommended the formation of Nyaya Panchayats for the area comprising 4 to 5 Viliage Panchayats. According to this Committee, "Each Panchayat should elect five persons to serve on the N. P., and if the five Panchayats comprising a group elect 5 such persons each to serve on the N. P., a total of 25 persons to serve on the N. P. would be obtained. These 25 persons should again be divided into 5 groups of 5 persons each. Each of these 5 groups should function as Panchayat Court, administering judicial functions alternatively . . . More and more powers to try criminal cases and civil and revenue suits should gradually be delegated to Panchayat Courts and that enhanced civil and revenue powers might be given to such courts if the parties agree to refer their cases for arbitration to those courts. These courts should also be authorised to undertake amicable settlement of civil or revenue disputes referred to them by the parties to such disputes."

The Panchayat Committee of the Local Self-Government Ministers' Conference recommended that generally the following items as illustrative of functions might be entrusted to the Panchayats.¹

Municipal and Welfare Functions

- (1) registration of births, deaths and marriages,
- (2) medical relief, including maternity and child-welfare dispensaries, hospitals, etc.,
- (3) general sanitation of the entire area including taking of preventive and curative measures against outbreak of epidemics ,
- (4) regulating places for disposals of dead bodies of human beings, animals and other offensive matter,
- (5) disposal of unclaimed corpses of human beings, animals, etc.,
- (6) construction and repair of drinking water well, public washing and bathing ghats and regulating sources of supply of drinking water, including piped water supply where possible, and prohibition of bathing, washing, etc., in any public water supply sources set apart for drinking,

(7) regulating, cleansing, removal and disposal of sullage, sewage, etc., including sale of manure therefrom,

(8) regulating the construction of latrines, urinals, water closets, drains, etc., with powers to remove, alter, repair, cleanse and disinfect the above mentioned including cess pools,

(9) cleanse, repair, remove, cover, fillup, drain or deepen or to remove water from a public well, tank, pool, etc., as a preventive public health measure,

(10) clear any vegetation, undergrowth, shrub or jungle for the same purpose.

(11) construction and maintenance of slaughter-houses,

(12) veterinary relief,

(13) management and control of cattle pounds.

(14) construction, repair, maintenance, sanitation and lighting of public streets, pathways, lanes, etc.,

(15) power to prevent encroachment on public streets and public places including hedges and to remove trees or branches of trees obstructing any public thoroughfare or causing public inconvenience,

(16) construction of roads, building of bridges, culverts, etc., between villages under their control including approach roads to highways and installation of public road stands,

(17) planting of trees on roadsides and other places, and afforestation on wasteland to prevent erosion,

(18) establishment of libraries, reading rooms, recreation grounds, children's parks, etc,

(19) establish, maintain and supervise one or more primary, middle or high schools,

(20) regulating construction of new building and existing buildings,

(21) organisation and regulation of fairs and markets,

(22) organisation and regulation of melas, festivals, community festivals, etc,

(23) extension and development of 'abadi' village sites,

(24) watch and ward of the village including crops therein,

(25) assistance and care of crippled, destitutes, blinds, etc.,

(26) construction and maintenance of *dharamsalas*,

(27) rendering assistance in extinguishing fires including maintenance of fire fighting equipment and personnel where possible,

(28) encouraging youth organisations.

Development Functions

- (1) crop experiment,
- (2) improvement of agriculture,
- (3) formation of co-operative thrift and credit societies and multipurpose co-operative societies,
- (4) organisation of co-operative farming and joint farming,
- (5) improvement of cattle breeding and general care of livestock,
- (6) establishment of common granaries,
- (7) promotion and development of cottage industries,
- (8) promotion of village and cottage industries.

Achievements of Panchayats in some States

Panchayats have achieved remarkable success in certain States like U. P., Punjab, Bihar and Rajasthan. Since their formation from March 31, 1951 to March 31, 1954, the Gram Panchayats constructed 1,049 miles of pucca and 13,975 miles of katcha roads, 2,444 katcha Panchayatghars, 44,175 katcha Gandhi chabutras and 9,088 pucca chabutras, 9,558 pucca and 13,569 kutchi wells for irrigation and 3,880 wells were converted from kutchi into pucca wells, repaired 59,313 pucca and 33,421 kutchi wells, 2,639 pucca and 19,861 kutchi roads and cleaned 262,601 pucca wells; opened 9,791 libraries, and 103,520 akharas and gymnasiums. Total work done by them is of the value of Rs. 9,57,81,669 of which Rs. 370,51,924 were contributed in cash and the remainder was contributed by *Shramdan*.

Besides, Nyaya Panchayats since their formation received 14,25,310 cases for disposal. Of this 13,46,637 cases were disposed of; 5,02,902 were compromised. In all 42,078 revisions were filed.¹

In the Punjab, "Despite feuds and factions the co-operative spirit in which most of the Panchayats are working for the welfare of the people is heartening. A total sum of Rs. 172.80 lakh was raised by the Panchayats from their own sources during the First Plan period. Special tax to be paid in the form of compulsory labour or cash for carrying out the destruction of locusts, construction of bunds against floods was enforced in a number of villages. The Panchayats expended a sum of Rs. 167 lakhs from their own funds on the works of sanitation, development, including street pavements, drains, village roads and culverts

¹ H. D. Malviya, *Op. Cit.*, pp. 310-311; 316-17.

and for libraries against a total Government grant of Rs. 90.13 lakhs for such work. They have also repaired and constructed Panchayatghars, dispensaries, first-aid centres, children's parks and recreation centres. The panchayats were also running 1,044 primary schools. By the end of the financial year 1953-54, works involving an expenditure of Rs. 14 lakhs were taken in hand by the Panchayats. In judicial sphere, Panchayats have handled quite a large number of cases. The number of cases decided in 1953-4 is as follows: Criminal cases—instituted 12,095, decided 9,328, compounded 6,277, dismissed 1,550 and convicted 1,540; Civil suits—instituted 11,087, decided 8,484, compromised 5,587, dismissed 1,239 and decreed 1,649.¹

In Bihar there are about 8,000 Panchayats functioning. During 1953-54, they constructed 3,544 new pynes; 714 new *Ahars*, 610 tanks and 2998 wells for irrigational purposes. During the same year they repaired 1,807 pynes, 1654 *Ahars*, 2,289 tanks and 2,239 wells. During 1951-54, a total of 8,563 social centres were opened by Gram Panchayats, benefiting 244,325 persons. They opened 544 basic schools and 3346 other schools (H. E., M. E., U. P., L. P.). The management of 918 old schools was transferred to the Panchayats, who opened 3,011 libraries. They also constructed 21,336 bore-hole latrines, 49,976 trench latrines, and 60,443 soakage pits during 1951-54. During 1953-54, 156,285 tanks and wells were disinfected and de-weeded; 814,535 persons vaccinated and 191,459 cattle vaccinated and 317,417 trees were planted, and 205,060 compost pits dug, 835 miles of new roads were constructed, 1398 miles repaired and 3626 new bridges and culverts constructed.²

Besides, during 1953-54, 30,760 cases were filed with the Nyaya Panchayats, of which 19,768 were compromised, 2,154 dismissed and 4,416 convicted.

The Panchayats in Rajasthan have aroused the genuine interest of the rural masses in themselves. The fields of work relate to repair and construction of roads, health and sanitation and lighting. They have got a large number of people injected and vaccinated. The Panchayats are running 96 Ayurvedic dispensaries, and in 1955, they spent Rs. 1.3 lakhs on medicines from their funds. There are about 700 non-Government schools run by Panchayats where 30,000 adults and boys are learning. Panchayats have also constructed Panchayat buildings, schools buildings, and *Gandhi chabutras*. Lakhs of trees have been planted by them and innumerable compost pits dug.³

1 *Ibid.*, pp. 378-9.

2 H. D. Malviya, *Op. Cit.*, pp. 493-4.

3 H. D. Malviya, *Op. Cit.*, pp. 533-4.

There are no separate Nyaya Panchayats in Rajasthan but Gram Panchayats carry on the judicial functions. In 1955, the Panchayats disposed of a total of 101,744 cases—both civil and criminal—the greater portion of which were compromised.

Three features of Rajasthan Panchayats deserve special mention :

Firstly, they have organised 13 *Panch-Sarpanch* Conferences and training camps, in which 7600 Panchas and Sarpanchas of 711 Panchayats participated. In course of these camps, the Panchayat legislations were explained, their judicial powers discussed and methods of carrying on Panchayat work clarified.

Secondly, they have given due attention to the development of village libraries. In 1955 ; 1,500 libraries and reading rooms were maintained by the Panchayats, out of which 133 received aid from the Government.

Thirdly, they have given attention to the provision of rural water supply. In 1954-55, a sum of 2.5 lakhs was given to Panchayats for work and 1,528 drinking water supply schemes were completed.

Finances of Panchayats

Nearly every Panchayat has a Village Panchayat Fund, to which are credited all allotments, general and special contributions and donations from the Central and Local Governments, Municipalities, District Boards,

The Village Panchayats derive their income from five main sources¹ :—

(i) *Taxes*—land cess ; entertainment tax ; surcharge on registration ; house tax ; professional tax ; tax on carts and carriages ; tax on animals and tax on land.

(ii) *Licence Fees*—dangerous and offensive trade ; factories ; and workshops ; encroachments ; burial grounds ; quarries ; pigs and dogs ; private markets and cart-stands and entertainments.

(iii) *Remuneration Enterprises*—like market fees ; cart-stand fees, bus stand fees ; slaughter-house fees ; fees on ferries ; private scavenging fees, fees on fairs and festivals.

(iv) *Communal income*—including fishery rents ; grass sales ; usufruct and windfall of trees, withered and wind-fallen trees ; street sweeping ; cattle droppings and other rubbish ; porambobes.

¹ H. D. Malviya, *Op. Cit.*, pp. 788-789 (adopted from table No. XIV).

(v) *Miscellaneous*—like magisterial fines, interest on deposits ; contributions ; grants ; sale of old articles ; newspapers ; rent and product of land ; loans and advances and District Board Contract Work.

Besides, they also receive some share of land revenue from the Government, e.g., in 1954-55. the Bombay Government, provided 15% land revenue to the Panchayats. In Madras $3\frac{1}{8}\%$ of land revenue ; in Punjab 10% ; in M. B. $3\frac{1}{8}\%$; in Mysore $12\frac{1}{2}\%$; in Saurashtra 20 to 33% was allotted to Panchayats.

But the Panchayats usually suffer from want of funds. The Report of the Congress Village Panchayat Committee has observed, "The general experience has been that the total income of the Village Panchayat is far from adequate. . . . The fact is undeniable that they suffer from shortage of funds."¹

The L. S. G. Ministers' Conference, 1954 and 1957 has suggested that (a) the following sources of tax and non-tax revenues should be allotted for the Panchayats :—

- (i) A graded tax on land revenue and rent.
 - (ii) A tax on trade, profession and calling.
 - (iii) Property tax.
 - (iv) Conservancy tax
 - (v) Licence fees for sale of goods in markets, fairs, etc.
 - (vi) Fees for fishing in ponds and sale of entire fish crop.
 - (vii) Income from management of public fairs.
 - (viii) Commission on collection of land revenue.
 - (ix) Fines and fees realised by Panchayat Courts.
 - (x) Tax in the form of compulsory service for public purposes.
 - (xi) Ferries.
 - (xii) Donation of land, money, *Shramdan* for public utility works.
 - (xiii) A portion of entertainment tax.
 - (xiv) Surcharge on Stamp Duty.
 - (xv) Panchayat Forests.
- (b) The Committee also suggested that the State Government should give increasingly larger grants to Panchayats as there is not much scope of increasing the income of Panchayats from tax items.

- (c) A suitable portion of land revenue should be assigned by the State Governments to Panchayats.
- (d) The Panchayats should increase their resources by getting voluntary donations in cash and kind.
- (e) Panchayats should spend as little as possible on their establishments, so that they could improve their financial position.

Control and Supervision

In all States adequate provision is made in the Act for the control of Panchayats. In judicial matters its actions are controlled by a competent authority with power to quash its proceedings, to revise its decisions, to withdraw or transfer cases to the higher courts, and in the last resort to cancel the jurisdiction or to supersede it.

The administrative control of the Panchayat is in some cases entrusted to the Government agency from a Tahsildar to the Collector or Commissioner. While in others to superior local bodies like the Local or District Board, *e.g.*, in U.P., the District Magistrate, the District Planning Officer and Assistant District Panchayat Officer exercise powers of supervision and control over the working of Panchayats. The District Magistrate has the power to suspend any member of a Goan or Nyaya Panchayat if he has failed to discharge his duties properly; while in Madras there is a separate Department of the Government, *viz.*, the Inspector of Municipal Councils and Local Boards and Regional Inspector to supervise and co-ordinate the administration of all the Panchayats, District Boards and Municipalities in the State. In M. P. Janapada Sabhas have been established and they are responsible for the efficient and proper working of the Panchayats. Supervision and control over them also vests in the Janapada Sabhas. The Directorate of Social Welfare is responsible for the proper working of Panchayats, who can recommend to Government for supersession of Panchayats for their negligence and inefficiency. In Bombay there is no separate department exclusively for Village Panchayats but there is a separate Local Self-Government Department for all local bodies. The District Collector checks and supervises the activities of the Panchayats. He has powers to dissolve or supersede a Panchayat and appoint an administrator. In Punjab there is a separate Panchayat Department. There are also District Boards in rural areas and there is every co-operation with Panchayats. In Bihar the District Magistrate, the District Judge and the Sub-Divisional Magistrate have powers to inspect the judicial records of the kutchery; while a Gazetted Officer or Chairman of the District Board can inspect the office of the Gram Panchayat. In each district there is a Panchayat Officer. In West Bengal, as

Panchayats are not statutory, Government do not exercise and control over sanctions of expenditure from revenue on account of welfare schemes. The Local Self-Government Department of the Government looks after the existing Panchayats and the District Magistrate ensures that election of Panchayat members are held according to executive orders of the Government. In Rajasthan, there is a separate Panchayat Department. The Chief Panchayat Officer Works under the direct supervision and control of the Government. The supervision and control of the activities of the Panchayats vests in the Local Self-Government Department. The Panchayat Department possesses powers of superseding a Panchayat. It is superseded only in case of incompetency, default or abuse of power.

The Congress Village Panchayat Committee

The Congress Working Committee at its meeting in New Delhi on 23rd and 24th of May, 1954, adopted the following resolution ;

"The W. C. have noted with appreciation the progressive introduction of the Panchayat system in various parts of India. This is not only in keeping with the ancient tradition of India but is suited to the present-day conditions. A modern State tends inevitably to become more and more centralised. This tendency should be balanced by the growth of local self-governing institutions, so that the mass of the people should themselves participate in this business of administration and in other aspects of community life, social, economic and judicial. This can best be done by the development of Panchayats in the villages of India. These Panchayats should have an administrative functions as well as judicial function. . . . Such Panchayats should be developed throughout the country in accordance with local conditions and traditions and represent the entire community in the area concerned 'irrespective of caste or creed.'"¹

In view of the importance, therefore a Committee was appointed under the chairmanship of Shri Nehru to consider this question in all its aspects. This Committee submitted its report in July, 1954 and it recommended as follows.²

1. The Panchayat system provides a sound basis for the establishment of healthy democratic traditions in India. Its development should be encouraged and fostered by the State to

¹ Shri Vinoba is also in favour of decentralising the power but he says that 'In a decentralised democracy, proper functioning of Village Panchayats should be possible only if there is a more equitable distribution of wealth, more specially of land, in the villages. Otherwise Gram Panchayats are likely to become instruments of oppression rather than of co-operation.' (Vide, A. I. C. C. Economic Review, Vol. VII, No 15 dated,, Decemler., 1, 1955.

² Report of the Congress Village Panchayat Committee, pp. 53-57.

enable the masses of our people to participate in the business of administration and other aspects of community life, social, economic and judicial.

2. For the achievement of the objectives laid down in the Constitution, the Village Panchayats should serve not only as units of Local Self-Government but also as effective institutions for securing social justice and fostering corporate life resulting in fuller employment.

3. The basic principles underlying the Constitution can be adequately fulfilled if a serious and systematic attempt is made to bring out decentralisation of economic and political power through the institution of V. P.

4. The introduction of land reforms has resulted in the removal of the system of intermediaries who formerly were performing some essential functions in the village society like credit, marketing, supplies, etc. The State should now try to provide these services through the promotion of V. P.

5. V. P. should develop a type of democracy through which will evolve a leadership representing all elements of village life to conduct the affairs of the community.

6. The success of V. P. will depend on the enthusiasm that they create and the feeling of oneness that they generate in the village community and the confidence they enjoy of all sections of the village population. It is, therefore, necessary to keep the panchayats, as far as possible, away from party politics.

7. Great importance should be attached to the need of unanimity in the elections of V. P. with a view to encouraging unanimity, it may be desirable to invest with more authority and power those Panchayats which elect their Panchas unanimously.

8. While deviations from the above basic concepts should be avoided as far as possible, it must be borne in mind that for the day-to-day functioning of the Panchayats no rigidity can be maintained in the country as a whole and it should be left to the States to evolve their pattern of V. P. in accordance with local tradition, conditions and requirements.

9. Election of V. P. should be on the basis of adult franchise. All the adults of the village should constitute a Gaon Sabha. Where this number is too large, representatives from each family of the village may form Gaon Sabha. The V. P. elected by the Gaon Sabha will be in the nature of its executive. The strength of the V. P. will depend on the population of the village. It should generally be a multiple of five. There should be reservation of seats for the Scheduled Castes and Tribes proportionate to their population.

10. The system of election of the V. P. should be as simple as possible. There will be no difficulty in those Panchayats where elections happen to be unanimous. Where there is no unanimity for all the members, elections may take place through secret vote. This procedure also can be simplified by the use of village pots or tin canisters. If necessary, the election officer may be allowed to register the votes of the members of the Gaon Sabha secretly in a separate room.

11. The unit of V. P. organisation should be generally on the basis of one village upto a population ranging from 1,500 to 2,000. Only such Panchayats will be able to work and plan on the basis of the felt needs of the community. Conditions differ from State to State and it is not possible to be rigid in this matter. Wherever necessary a few small villages could be combined into one V. P.

12. It would be helpful to have some form of a supervisory body to regulate and co-ordinate the activities of the Panchayats, and these supervisory bodies may also have some executive functions. Such bodies may preferably be set at the Sub-divisional level though their existence at the District level or other convenient levels is not ruled out. Such supervisory bodies should not be nominated but should be indirectly elected by Sarpanchas. Some technical experts may be associated with its work without the right to vote.

13. The Panchayats should have different functions—municipal, social, economic, judicial. The municipal functions should include sanitation, village roads, construction and maintenance of community builds, drainage, provision for drinking water, street lighting. Education may be entrusted to the panchayats in case they are not being looked after by the District Boards. In such cases, the educational functions of the Panchayats should be under the supervision of the Education Department of the State. In addition to certain compulsory municipal functions, there may be some discretionary functions also which the State Governments may entrust to the V. P. in accordance with their efficiency of working.

14. The composition and functions of the judicial or Adalti Panchayat should be separate from the V. P. Each judicial Panchayat should serve a few villages covering a population of about 5 to 6 thousand in a radius of, say, 3 miles. Each Gaon Sabha should elect along with their representatives for the V. P. a panel of 5 members to work on the judicial Panchayat. On this basis the judicial Panchayat should consist of about 30 such members elected from a few villages. Cases should be tried by a bench of five out of the members of the judicial Panchayats by a system of rotation. The cases should be heard and disposed of in the

village, to which the particular case belongs, and the whole legal procedure should be completed in one sitting in order to avoid unnecessary delays. The atmosphere of these judicial Panchayats should be free from the existing atmosphere of courts in order to render village justice simple, cheap and expeditious. No lawyers should be permitted to appear in these judicial Panchayats. In each judicial panel of five elected by the V. P., there should be at least one Harijan and one woman.

15. Planning in India can be successful and achieve its objectives only if it is based upon our villages. In this V. P. will have to play a vital role. For this purpose the Development Councils envisaged in the Five Year Plan should be woven around the V. P. This would help in creating a permanent kind of leadership in the village and would be able to cover all aspects of rural development. The C. D. P. and the N. E. S. officers and the village level workers should actively help in the evolution and growth of V. P. so that they may be equipped to shoulder an ever-growing responsibility for the implementation of the National Plan in their area.

16. Special provision should be made for the training of workers to make them fully competent to take up development works in all their technicalities. This would create opportunities for unemployed young men. Attempt should be made to enlist the co-operation of non-official agencies like the Sarva Seva Sangh, the Gandhi Memorial Trust and the Kasturba Gandhi National Memorial Trust for such work.

17. The Panchayats should be increasingly assigned the task of revenue collection and 15 to 20 per cent of the collection should be allotted to them for their day-to-day functioning. The Panchayat should also be empowered to levy a labour tax. But, as far as possible, efforts should be made to get voluntary contributions in the form of Shramdan. In case an individual is not prepared to work in lieu of the labour tax, he should be asked to contribute in cash twice the amount of labour work. The management of common lands of the village can be a third source of income for the V. P. When a Panchayat has successfully worked for some time then alone it may be permitted to impose taxes under the heads : (i) Tax on land holdings ; (ii) Vehicle tax ; (iii) Profession tax ; (iv) Tax on Tea Shops, and (v) Revenue from management of hats, bazars, mela grounds, etc. Under the existing circumstances aid is absolutely necessary to enable the Panchayats to carry on their work properly.

18. Functions and organisation of the Co-operatives and V. P. must be kept separate from each other for a variety of reasons, *e.g.*, scope of co-operatives is wider than the V. P., it is

optional and not compulsory like the latter. V. P. must mobilise support for the growth of co-operatives, which in their turn should periodically report their progress to the Panchayats.

Village Panchayats under the First and Second Plans

The First Five Year Plan accorded a very important role to Panchayats in National Planning. It said, "We believe that the Panchayats will be able to perform its civic functions satisfactorily only if these are associated with an active process of development in which the Village Panchayat is itself given an effective part. Unless a village agency can assume responsibility and initiative for developing the resources of the village, it will be difficult to make a marked impression on rural life. for, only a village organisation representing the community as a whole can provide the necessary hardship. As the agencies of the State Government cannot easily approach each individual villager separately progress depends largely on the existence of an active organisation in the village which can bring the people into common programmes to be carried out with the assistance of the administration."¹

The Second Plan observes, "The development of Village Panchayats on the right lines has significance for several reasons, under the impact of new developments, including the growth of population, land reform, urbanisation, spread of education, increase in production and improvements in communications, Village society is in a state of rapid transition. In emphasizing the interest of the community as a whole and in particular the needs of those sections which are present handicapped in various ways, Village Panchayats along with co-operatives, can play a considerable part in bringing about a more just and integrated social structure in rural areas and in developing a new pattern of rural leadership."²

The Planning Commission therefore has provided that by 1960-61 the number of Village Panchayats will increase to 244,564 from 117,593 in 1955-56. The First Plan recommended that to enable Panchayats to play their part in organising village development programmes, legislation should confer on them certain functions relating to village production programmes and the development of village land and resources. This programme has been further examined by the Second Plan, according to which the function of Village Panchayats may be distinguished between two groups—administrative and judicial.

(1) Administrative functions may be divided into four groups: (a) civic, (b) development, (c) land management, and (d) land reforms.

¹ *First Five Year Plan*, 1951, p. 133.

² *Second Five Year plan*, p. 151.

(a) The civic functions of the Panchayats include such tasks as village sanitation, registration of births and deaths, etc. organisation of village watch and ward, construction, maintenance and lighting of village streets, etc.

(b) The functions of Panchayats in relation to development include :

- (i) framing of programmes of production in the village ;
- (ii) in association with co-operatives, framing budgets of requirements for supplies and finance for carrying out programmes ;
- (iii) acting as a channels through which the increasing proportion of Government assistance reaches the village ;
- (iv) developing common lands such as wastelands, forests, *abadi* sites, tanks, etc., including measures for soil conservation ;
- (v) construction, repair and maintenance of common village buildings, public works, roads, tanks ;
- (vi) organisation of mutual aid and joint effort in all activities ;
- (vii) promotion of co-operative societies ;
- (viii) organising voluntary labour for community works ;
- (ix) improvement of livestock ; and
- (x) promoting small-saving.

(c) The land management functions includes :

- (i) regulation of the use of common lands ;
- (ii) cultivation of lands set apart for the benefit of the village community, as in consolidation of holdings ;
- (iii) adaptation of standards of good management and cultivation to local conditions and their enforcement ;
- (iv) Association with the work of maintenance of land records.

(d) The functions of the Panchayats in relation to land will consist of :

- (i) determination of land to be allotted to owners and tenants on the exercise of rights of resumption for personal cultivation ;
- (ii) determination of surplus lands on the application of the ceilings on agricultural holdings ; and
- (iii) redistribution of surplus lands arising from the imposition of ceilings.

2. The judicial functions of the Panchayats concern :
- (i) the administration of civil and criminal justice ;
 - (ii) enforcement of minimum wages for agricultural workers ;
- and
- (iii) simple disputes pertaining to land.

Defects in the Working of the Panchayats

The experience of the working of the Panchayats has shown that they have not fulfilled the high expectations that were raised about them on the basis of their glorious past. Various reasons have been advanced for the deficiencies in their working. Among them may be mentioned the following as being the most commonly put forth :

(1) That there is faction among the villagers which makes the common acceptance of the decisions of the Panchayat impossible. Faction also makes it impossible for a common mind to develop within the Panchayat and decisions are coloured by the factious interests of the members.

(2) That there is a lack of proper leadership in the village so that the Panchayat becomes a tool in the hands of irresponsible elements in the village population. No respect is possible to develop among the villagers for an institution which is so abused.

(3) That there is indifference among the villagers to the need for the maintenance of proper civic amenities in the village.

(4) That the Panchayat is often under the overpowering influence of the big landlord or moneylender in the village and, therefore, fails to inspire confidence among the majority of peasants in the village. Further the powers that are parted with by the State Governments in favour of the Village Panchayats with a view to training the villagers in the art of self-government are always usurped by this small group. The interests of the small minority are served at the cost of the needy majority. Thus the main ideal of democratic training and exercise of local power for the benefit of the people gets frustrated. Instances have been common where the subsidies given for the village roads or sanitation were spent on the roads in front of the houses of this small group or in the sanitary and ugly spots only near them were attended to while the rest of the village was neglected. Sometimes the funds disappear altogether but the villager cannot dare to ask the explanation of the small group. The villager is loath to court trouble on account of the very scant protection given to him by the distant central government and also because he is lost in toil and care for his daily bread.

(5) That the financial resources of the Panchayats are very meagre so that they can never hope to look after even the elementary functions assigned to them. Government subsidies go only a little way towards removing this want. Some local works have to be left out on account of their heavy cost, in spite of their urgent necessity. For example, village water works are in a lamentable condition, because they cannot be constructed on the scale required for the population, and even if constructed, they cannot be maintained for want of funds for repair. Approach roads furnish another example on account of costs of and opposition to acquisition proceedings as well as of the cost of the construction of bridges and culverts.

(6) That the villagers resist the imposition of taxes like the house tax and would rather go without the Panchayat than have one and be subjected to taxation.

Rehabilitation of Gaon Panchayats

In order to reconstruct India on peaceful and democratic foundations, it is desirable to establish self-governing village communities or Gram Panchayats as of old, with necessary modification to suit the modern conditions. These Panchayats will be very different from the present Local or District Boards which possess limited powers. They will be autonomous so far as their internal administration is concerned, and will be, as far as possible self-sufficient in regard to at least the basic requirements of life like food, clothing and building materials. They will be linked up with the taluka, district, division, province and country as a whole, for purposes of common policy and interests.

Formation. Every village with a population of 1,000 or more and having sufficient income for its needs should be declared a Gaon (village) Panchayat, and that villages with population below 1,000 should be grouped together to make a Panchayat. So far as grouping of villages is concerned it should be undertaken when lying within a radius of two miles and after taking into account the local conditions of those villages and their ability to raise the finances required.

Membership. Any person of 21 years of age or above, residing within the Panchayat area, should be elected a member and entitled to vote. No voter should be entitled to vote or to stand as candidate for more than one Panchayat. There should be 9 to 15 members in a Village Panchayat and the electoral roll, something like the register of voters for each village, should be prepared by *patwari*, and revised periodically by a *kanungo*. The assistance of a few non-officials in the preparation of the electoral roll will be appreciable. It will be opposed to democratic principles if the zamindars and moneylenders should be disqualified

from standing as members of the Panchayat, although the legitimate fear of the *kisans* is the zamindars, who as a class have considerable power and influence in villages and dominate the Panchayat. Therefore it will be desirable that at least three-fourths of the members should be tenants and field-workers. The inclusion of the village artisan, the *patwari*, therefore, would, no doubt, facilitate the work of the Panchayat.

Finances

Every village Panchayat should be assured of certain income for the efficient working of its plans. The sources of their income should be (i) *Fasli Chanda*. 5 seers after each plough in the village may be charged as *Fasli Chanda* per harvest. Such payments in kind are, undoubtedly, very convenient to the cultivators; (ii) *Manual Labour or Shrandan*. It is a very natural form of public co-operation. In ancient India, and even now in certain villages of Udaipur division, public buildings, tanks, wells, etc., were and are constructed by the joint efforts and voluntary and honorary labour of the villagers. There should be at least 5 days of free manual labour after every plough in the village. This will facilitate the work of the Panchayats a great deal without any botheration regarding money and cash; (iii) Private donations on the occasion of social functions like marriages, sacred-thread ceremonies, etc.; (iv) Miscellaneous receipts in the form of arbitration fees and fines, grazing charges and other special cesses for various purposes. Such cesses must, however, be realised in kind; (v) Capital grants or grants-in-aid for recurrent purposes should be freely provided by the various reconstruction funds set up by the State Governments; (vi) Borrowings may also be allowed by the sound Panchayats in special cases.

Each Gaon Sabha should have a Gaon Fund to which shall be credited the following: (i) Taxes on the rent payable not exceeding one anna in a rupee and on rent received not exceeding six pias in a rupee, on trade, calling, and profession, and on buildings owned by persons who do not pay any of the aforesaid taxes; (ii) sums handed over or assigned by the State Governments, District Boards, Courts or gifts; (iii) portion of rent or other proceeds from the nazul property; (iv) rent or revenue collection charges; (v) income, *adalat* Panchayats, fairs and markets; and (vi) loans and the existing balance of the Village Panchayats.

Functions

As regards the functions to be followed by the Panchayats two things must be borne in mind. Firstly, the Panchayats should not be the only local authorities for the villages but there would be the District Boards also exercising jurisdiction in them. It is

not, therefore, necessary that all the local services for the villages should be provided by the Panchayats. *Secondly*, the amount of political initiative and talent available in the village is bound to be small and their financial resources too cannot be very large. In view of these considerations it does not seem feasible to entrust the Panchayats with the maintenance of costly institutions whose clientele should be under the District Boards.

Functions of the Village Panchayats should be of the following kinds :

Firstly, their own independent functions should be only a few relating to construction and upkeep of village works like roads, wells and tanks, and buildings, lighting, provision of village libraries, reading rooms, gymnasium, playgrounds and *akharas* and other measures of public utility. They should also allot the land to the peasants and collect the land revenue on behalf of the village. The regulation of the inter-village markets, celebration of the local festivals, establishment and the maintenance of the village Primary Schools or Lower Basic Schools, Night Schools for adults and the organisation of basic and adult education ; and management and care of village grazing lands for the benefit of all the people should also fall under the ambit of the Panchayats.

Secondly, they should be entrusted to them by the District Boards a large number of agency functions in connection with the repairs of Boards' buildings situated in the village, distribution of seeds and manures and efficient implements, starting of cottage industries, encouragement of co-operation, co-operative farming and consolidation of holdings, marketing of agricultural produce, improvement in the means of communications, regulation and distribution of water-supply for irrigation purposes, extension of village sites and control of rural housing, regulation of hours of works and conditions of employment in agriculture, making arrangements for the co-operative purchase of raw materials and consumption goods, and the co-operative sale of the articles of village handicrafts, and the regulations of village trade, industry and commerce by organising credit and non-credit co-operative societies under the supervision of the experts, check soil erosion and reclaim waste lands.

Thirdly, they should have the right of making representation and complaints to the Government and the District Boards regarding the inadequacy or mismanagement of any of the services which it is the duty of these authorities to provide for the villages. Thus they should have the power to enquire and report about the misconduct of certain officials, e.g., Amin, Vaccinator, Constable, Patwari, Patel, Peon, Process-server, to contract for collection of taxes and other dues on behalf of the Government and proprietors on payments and to acquire land through the Collector.

Finally, the proper judicial duty of the Panchayats should be conciliation and arbitration rather than adjudication. Conciliation is resorted to by disputants for resettlement of disputes informally, even in the absence of legal revision but if the law recognises it as a regular part of judicial administration, its utility and effectiveness will be greatly increased. To this end in view the law should provide that civil suits shall not be filed in a court, until the plaintiff has tried conciliation with the help of the Panchayat of appropriate jurisdiction. A certificate of conciliation from the Panchayat should be necessary to enable the plaintiff to go to a court. When a dispute comes before the Panchayat for conciliation it should summon the parties before it, hear the statements, note the points of disagreements and try to effect a reasonable compromise by arousing their friendly feeling and pointing out the troubles, delay and cost of litigation. No lawyers should be allowed to appear and nothing said before the Panchayat should be admissible as evidence before the courts should the case ultimately go there.

If an agreement between the parties is reached it should be formally recorded and signed and should have the same validity as a formal judgment of a court of law. In cases arising out of contract the Panchayats may also act as arbitrators. The law can help by providing that debt and other contracts up to a certain value shall compulsorily contain an arbitration clause binding the parties to the acceptance of the Panchayat's awards, should a dispute concerning it arise. Conciliation and arbitration have been the traditional role of the Panchayats. If properly organised they can dispose of a very large number of cases out of the courts. It is said that in Denmark and Norway about 75 to 90% of the suits are settled in this way. The Panchayats should have no jurisdiction in criminal cases.

Supervision of the Panchayats

The duty of inspection of the work of the Panchayats should belong to the District Boards and they should create for the purpose a force of Panchayat Supervisors or Inspectors each of them having under him 40 to 50 panchayats or fewer. Their qualifications and pay should correspond to those of the organisers of rural development work. The District Boards should be allowed to dissolve the Panchayat where necessary. Their initial establishment and supervision should not be the duty of the District Boards. This work should be entrusted to a Panchayat officer maintained in each district by the State Governments who would work in close collaboration with, but independently of, the District Boards. He will also act as a kind of Super-Inspector of the State Government supervising the work of the District Boards' Panchayat

Supervisors and Inspectors in relation to these bodies. He will as well report to the Government cases of failure of the District Boards to foster and promote the Panchayat organisation.

Smooth and cordial relations among the Gaon Sabhas will also be necessary. The spread of proper type of education and appointment of honest and selfless workers as Panchayat officers for organising and supervising the working of the Panchayats in early stages of their growth appear to be essential factors for efficient working of the Panchayats. These duties can be entrusted to the Development Staff appointed for the development work in rural areas, instead of Panchayat officers, although the existing system of their appointment needs to be considerably changed. The rural development officer, on the one hand, should create interest in the village activities for self-help and self-improvement and, on the other, it should represent the village to the Government in the spirit of a spokesman of the former. The Village Panchayat area should be a seat of all public services or a unit thereof. For instance, it must have a veterinary sub-dispensary, a civil sub-dispensary, and it must be headquarters of the Agricultural Supervisor, the Sub-Inspector of Weights and Measures, the Head Constable of Police, and the Chief Village Patel for all villages in the group, the beat guard of the Forest Department ; it must have also a small branch of post office and a secondary school for boys and girls.

DISTRICT BOARDS

Local Bodies in India may be broadly placed into two classes—urban and rural. Urban bodies are mostly known as Municipalities, whose duties generally are to provide, maintain and promote the amenities of life for the civic population. Their activities fall under five main heads—education, public health, sanitation, medical relief and public works.

The principal local bodies operating in rural areas are District or Taluka Boards and Village Panchayats. There were 12 Municipal Corporations, 1,453 Municipal Committees and Boards, 383 Small Town Committees, 82 Notified Area Committees, 309 District and other Local Boards and 1,23,670 Gram Panchayats in India at the end of October, 1956.¹

Constitution and Working of District Boards

The constitution of the District Boards and the Municipalities in all the States have a common pattern. They consist of varying numbers of members usually not exceeding 50, most of them being elected by electorates based on property, tax paying or educational qualifications. No figures are available to estimate the percentage of total population enfranchised for local elections, but it falls considerably short of adult suffrage. Representation of minorities in some States (like U. P.) has been provided for by reservation of seats with or without weightage, and by separate electorates, while in others, it has been provided for by nomination. There is a small nominated element usually of three members only on every Board. Since the advent of Provincial Autonomy, nominations had been abolished in some States like Madras and Bombay and replaced by co-option.

The existing size of the Board is well under 50 members though occasionally it may be as small as 15 according to the population of the area. The U. P. Local Self-Government Committee recommended that the District Boards should have 40 to 100 members. A small council is an advantage from the point of view of transaction of business, while a large one is more widely representative. The favourite size of the councils in U. S. A. is about twenty, in England thirty to forty, and in the continental countries like Germany up to one hundred or more.

The term of the District Boards varies from three to four years. The U. P. Committee recommended that it should be five years. A long term tends to weaken the popular control of the local bodies, and a three to four-year term is the general practice in other countries of the world too. On the whole a three-year term seems to be best, and it must not be more than this. Partial renewal of local bodies in India has not done well and has been discarded almost everywhere. There is no need to revive it.

¹ *India*, 1957, p. 394.

Though in common parlance the Chairman elected by and responsible to the Board is called its executive head in reality the highest executive power is not concentrated in his hands. The Boards have really no integrated executive at all, there is, on the contrary, a division and dispersal of executive authority between the Board itself, the Chairman, the various committees, and the executive officer or secretary. This is illustrated by powers to make appointments, or sanction contract. The appointment of some of the highest officials is vested in the Board itself (*e.g.*, executive officer, secretary, engineer, etc.), of the middle ones in the Chairman, and of the lowest in the executive officer, secretary or other departmental heads. Contracts above a certain sum require the sanction of the Board, and below that they require the sanction of the one of the Committees or the Chairman. The Chairman is nearest approach to the Board's head executive. He is charged with the duty of general supervision over the Board's administration, and every item of executive power, which is not vested in any authority, belongs to him. In some States he also presides at the Board's meetings.

The principal differences between municipal functions and the District Board's functions are that they cannot undertake public cleansing, lighting, regulation of building, etc., and their public health activities are much more elementary than those of Municipalities, being confined generally to vaccination, permanganation of wells and control of epidemics. With the exception of a few District Boards in Madras which hold valuable railway property, they do not own or operate public utility services of any kind, nor are they empowered to do so. Most important of their activities, accounting for more than 80% of their expenditure are primary and secondary education, roads, medical relief funds, and ferries.

The functions of the District Boards are less developed than even those of the Municipalities, *e.g.*, the number of hospitals and dispensaries is hopelessly small; educational facilities to the boys and girls of the school-going age is not well provided for; road mileage is small and even the existing roads are often in a bad condition. Financial inadequacy to a great extent and partly mismanagement are responsible for this state of affairs.

It is worthwhile to quote the Simon Commission's remarks about the efficiency of the District Boards which runs as, "In every State while a few local bodies have discharged their responsibilities with undoubted success, and others have been equally conspicuous failures, the bulk lies between extremes. Often a single local authority may exhibit gross neglect of certain vital civil services, while showing keenness in efficient discharge of the other equally important activities. A local board faced with strictly limited sources, deliberately decides to develop one phase

of activity, which it considers of greater public benefit, at the expense of another. It reduces its expenditure on roads and spends the money so saved on opening new schools and dispensaries. The neglected road soon furnishes evidence to every passer-by of undoubted deterioration. The new school or dispensary, on the other hand, passes unnoticed or fails to afford equally insistent testimony of counter-balancing efforts, and the board is naturally, though not quite equitably, added to the list of those that have proved administrative failures."

Thus the District Boards have been found to be inefficient in administration and irresponsible in the management of the education, medical aid, roads and other public works. Their supervision and control of the village panchayats is also very unsatisfactory ; as advisory bodies they have proved themselves equally disappointing thereunder. It has even been found that in some cases the staff is utilised for political propaganda and election work instead of doing public service. There are often improper appointments and improper dismissals. There is also considerable corruption.

Their Functions

The District Boards are charged generally with the adoption and promotion of measures calculated to improve the safety, health and comfort and convenience of the people living within their jurisdiction with certain important differences, the functions of the District Boards are similar to those of the Municipalities. Like the latter they too have obligatory functions. The principal duties of the District Boards are :—

(A) Obligatory Functions

- (i) the construction and maintenance of roads and communications ;
- (ii) planting of avenues along public highways ;
- (iii) aiding and maintaining the medical and veterinary institutions and schools ;
- (iv) the provision and protection of water supplies for human consumption and of canals, tanks, etc., for irrigation for the use of cattle and generally for purposes connected with agriculture ;
- (v) the dissemination of sanitary knowledge ;
- (vi) the establishment of rest houses, markets, poor houses and asylums, public parks and gardens ;
- (vii) the management of pounds and ferries and properties and institutions entrusted to them ;
- (viii) the inception and control of relief works in time of famine ;
- (ix) the aiding of agriculture by the promotion of agricultural exhibitions and the establishment of model farms ;
- (x) the provision of facilities for improving the breeds of cattle.

(B) Permissive Functions

The District Boards have the following functions to perform under this head :—

- (i) laying out new public streets ;
- (ii) reclamation of unhealthy localities ;
- (iii) registration of vital statistics ;
- (iv) prevention of river pollution.

Sources of Income and Expenditure

The sources of the incomes of the District Boards are very limited in comparison to that of the Municipalities. Their main sources of income are :—

(i) *Land cess on land revenue.* It forms about 70% to 90% of their total tax revenue. In 1948-49 the income from this source amounted to Rs. 1130 99 lakhs.

(ii) *Tax on circumstances and property (or Haisiyat Tax).*

(iii) *Tolls* which are collected at the public ferries.

(iv) Fines imposed on the owners of cattle, which have been kept in pounds or houses or sheds.

(v) Fees from schools, medical and veterinary hospitals, fairs and exhibitions.

(vi) Rents for the use of buildings and land like *sarais* and *nazul* property of the District Boards.

(vi) Grants form the most important source of income to the District Boards and on an average account for about 40 p.c. of their total income. These grants are made for specific purposes like roads, education, medical and public health activities.

The important items of expenditure of the District Boards are :—

(i) *Education.* District Boards spend the largest part of their income on education. They confine themselves to primary education only. In 1948-49, they spent Rs. 1543·32 lakhs on education alone.

(ii) About 30 p. c. of the total expenditure of the District Boards is made on roads and buildings, even then the conditions of roads in the rural areas cannot be said to be satisfactory.

(iii) The next important item of expenditure of the District Boards is on hospitals and sanitation. In 1948-49 they spent about Rs. 321·71 lakhs.

(iv) The other items of expenditure are general administration and collection of revenue, public works, veterinary, pounds, fairs exhibitions, and vaccination.

The following table compares total income from taxation and *per capita* incidence of the Local Bodies :—

Aggregate Population, Total Income, Income from Taxation and per
Capita Incidence of City Municipal Corporations, Municipalities
and District Boards for the year 1946-47.¹

Local Body	No.	Population	Total Income (In lakhs) Rs.	Income from Taxation		Incidence per head of population	
				Amt. In Lakhs (Rs.)	% of the Total Income	Total Income from all sources Rs. as. p.	Income from Taxation Rs as. p.
1. City Municipal Corporations	3	4,755,547	1235.2	892.4	72.24	25 15 7	18 0 0
2. Municipalities	628	21,946,887	1518.2	1040.9	68.56	6 14 7	4 11 0
3. District Boards	176	204,522,250	1555.3	522.2	33.58	0 12 2	0 4 1
Total	797	231,224,684	4308.7	2455.6	56.99	1 13 1	1 0 11

1. Report of Local Finance Enquiry Committee, 1951, p. 83.

The problem of improvement of the District Boards finances has been studied and reported upon by a large number of Commissions and Committees from time to time. The Indian Taxation Enquiry Committee 1924, made the following suggestions to add to the sources of local bodies :—

1. The land revenue should be standardised at a low rate of 20 or 25 % of the rental to allow greater scope for local taxation of land.

2. Special assessments should be resorted to both by urban and rural authorities to finance improvement schemes.

3. The tax on circumstance and property, trade and profession should be improved, specially in regard to the machinery of their assessment and collection.

4. In selected areas, local bodies should levy a fee for registration of marriages.

5. The scope of grants in aid from Government should be extended to include service of national importance, and these grants should be used on some simple and easily intelligible basis.

The Taxation Enquiry Commission which submitted its report on February 28, 1955, pointed out that there is a wide spread feeling that all important taxes are in the State list and no tax is exclusively local and that is why the local authorities are not able to perform their functions properly. The Committee has recommended the following taxes which should be developed by the local authorities :—

- (i) taxes on land and buildings ;
- (ii) taxes on the entry of goods into the area of local authority for consumption, use or sale therein (popularly known as 'octroi') ;
- (iii) taxes on animals and boats ;
- (iv) taxes on professions, trades, callings and unemployments.

Suggestions for Improvements

We have seen above that the functions of the District Boards are less developed partly because of the inadequacy of the funds and partly because of the mismanagement. Hence, if they are to work efficiently on sound lines, it is necessary that they should be reorganised and their functions should be properly defined with a view to ameliorate the living conditions of the villages. Education is the first need of the situation. Education, specially primary, must be made compulsory for every child. Adult illiteracy must be liquidated in the shortest possible time. Libraries, reading rooms, and radio sets should be available for every village to provide instruction and recreation for its inhabitants. There must be a dispensary within every village. Each village should also have its duly protected water supply. Cholera, malaria, small-pox and plague epidemics take a heavy toll of life every year. Public health

administration of the Boards must banish these epidemics. In England and other countries modern public health administration had made them things of the past. The same can be done for our rural areas. Blindness, total or partial, afflicts a considerable number of our rural population and its prevention and treatment should be a special care of the District Boards. Communication should be so developed that no village will be cut off from its natural markets.

While progress in the above directions is urgently needed, it is equally essential that the District Boards should have the power to organise for rural areas the same social services which are done by the Municipalities. It is true that there are and always will be important differences between the problems of urban and rural areas and these will be reflected in respective functions of urban and rural authorities, but such differences should never be over-emphasised, or interpreted to mean that rural population should always be content with lower standard of living than urban. A clean water supply, satisfactory housing, maternity and child welfare, health and unemployment insurance are as much needed by rural people as by the urban. The complacent belief that in rural areas there is no over-crowding or poor housing, or an environmental insanitation, is altogether ill-founded and the sooner it is given up the better. The District Boards must be empowered to deal with these and similar other problems.

We are of the opinion that District Boards should retain their present duties including education and develop them fully. Their field of operations should be kept distinct from that of district administration. Additional function for them should relate to various social and trading services, and the economic development of the rural areas generally. Among other things they should strive for consolidation of holdings, popularization of scientific methods of agriculture, distribution of improved seeds, improving the stock of cattle promoting co-operation, encouraging rural cottage industries, etc. They should become the principal agency of rural development in the widest possible sense of the term.

The District Boards may also appropriately be given duties of supervision and control over the lesser local authorities within their area. In view of the fact that there may be some clash of interest between District Board and Panchayats both in the sphere of functions and finance, it is desirable that the duty of initial establishments of panchayats should devolve on a special officer of the State Government instead of District Boards. The District Boards should also be empowered to entrust to the panchayats within their respective areas such agency duties as they think fit. These Boards should work as advisory bodies preparing budgets for and seeing to the administration of the panchayats in their charge so that they could function as real rural development agencies.

APPENDIX I

AGRICULTURAL LABOUR

Their Strength and Growth

One of the most disquieting features of the rural economy of India is the growth in the number of the agricultural proletariat. In 1951, the agricultural labour population of India comprising owner cultivators, tenant cultivators, farm hands, field workers, agricultural serfs and unspecified class of workers, was about 249 million, as against 106 million souls in 1941, 93 million in 1931, and 102 in 1921.¹ If we consider only the wage-earning class, *i.e.*, the agricultural proletariat with no stake in land whatsoever, 27 million farm hands and field-workers, and 13 million agrestic serfs and unspecified workers together, will constitute the floating and landless working population in rural areas. Thus out of a total population of 106 million agricultural labourers, 62 per cent are actual cultivators and 25 depend upon wage labour as their principal source of livelihood.²

In the following table are shown changes in the relative proportion of agricultural workers during the last few decades and the percentage of the total number of agricultural labourers to the total number of workers engaged in all primary and secondary industries.³ :—

	1911	1921	1931	1941	1951 ⁴
	(In millions)				
Total number of agricultural workers (in millions)	91	102	93	106	100.0
Percentage to total workers in Primary Production	93.8	97.9	93.1	92.4	96.1
Percentage to total working Population in India	65.1	69.9	59.6	62.0	60.1
Percentage to total Indian Population	28.9	31.9	26.3	27.2	28.0
Percentage of Industrial Workers to Agricultural workers	19.7	15.6	16.2	16.0	15.4

¹ *Census Report* for 1951, Vol. I, Pt. I-A., p. 92.

² *Op. Cit.*, p. 93.

³ Lorenzo, *Indian Labour in Primary Industries*, (1948), p. 16.

⁴ 1951 figures calculated by me.

It is noteworthy that the number of agricultural proletariat has increased steadily during past years. In 1882, the Census Report recorded 7.5 million "landless day labourers" in agriculture. This number increased from 18.7 million in 1891 to 21.6 million in 1921, and over 33 million in 1931. The number of labourers per 1,000 cultivators rose from 254 to 417 in the same period. In the Indian Union, according to the census of 1951, the number of agricultural labourers is 44.8 million. According to the Census Commissioner for India, 64.4 per cent of the agricultural population are owner-cultivators, 12.3 per cent are tenant-cultivators, 21 per cent agricultural labourers and 2.3 per cent are rent receivers. There can be no doubt that the number continues to increase as has been noted in various enquiries.

The growth of this class may be accounted for by the increase of absentee landlords, by the transfer of land from the hands of cultivators into the hands of their creditors, by the displacement of village crafts and industries due to the spread and use of machine-made products, by the gradual transformation of the old village economy resting on custom and payment in kind into a price economy based on contract. Every circumstance which has weakened the position of the small holder, as Dr. Mukerjee observes, has increased the supply of agricultural labourers, viz., "the loss of common rights in the rural economy, the disuse of collective enterprise, the sub-division of holdings, the multiplication of rent receivers, free mortgaging and transfer of land, and the decline of cottage industries."¹ At another place Dr. Mukerjee explains that one of the factors, that has contributed to the growth of an increasing class of landless labourers, is the economic transition through which some of the criminal tribes and castes of India have been passing. Many of them sought refuge in jungles and foothills. In most tribal areas the original tribal system was one of a village headman and ryotwari tenure. Under the land revenue policy of the British Government, a limited number of persons were given proprietary rights. These rights were gradually lost as moneylenders and traders exploited the ignorance and improvidence of these primitive people. Most of them were converted from tenants into landless labourers. This has happened to the Gonds and Bhils in M. P., the Korwas in the U. P. and the Mundas in Chhota Nagpur.²

Regional Distribution

These figures also reveal the same tendency of increasing landless labourers in the country. According to this statement there are 402 landless agriculturists for every 1,000 agricultural landholders. There are enormous differences in this respect from State to State. This number is smallest in U. P. 161, and largest in Travancore-Cochin, 782. The number for other major States, arranged

¹ R. K. Mukerjee, *Land Problems of India*, p. 215.

² R. K. Mukerjee, *Economic Problems of Modern India*, Vol. I, p. 42.

in order, are as follows: Mysore, 190; Assam, 235; Orissa 271; Bombay 383; Madhya Bharat 397; Madhya Pradesh 413; Hyderabad 507; Bihar 510; Rajasthan 544; West Bengal 609 and Madras 714.¹

The following table indicates the growth of the agricultural proletariat² :—

			1911	1921	1931
			(In 000's)		
Landlords	...	...	2,845	3,727	3,257
Cultivators	...	...	71,096	74,665	61,180
Agricultural Labourers	...	...	25,879	21,676	31,480
Others (market gardeners, cattle raisers, foresters.)			5,196	4,608	6,536

In the decade 1921-31, the proportion of agricultural labourers to cultivators increased at a rapid rate as indicated by the following table³ :—

Principal Occupations

Workers—				
farm servants plus field labourers	Ordinary cultivators	Agricultural Labourers	Actual workers, Cultivating owners plus tenant cultivators.	
	1921		1931	
Total figures	21,676,107	74,664,886	24,925,357	61,180,004
Ratio	291	1,000	407	1,000

In spite of the change in classification adopted in 1931 census, which gives us an apparent decline in the agricultural population, these figures reveal the tendency to an increasing landless population. For 1941 the figures are as follows :—

Workers—				
farm servants plus field labourers	Ordinary Cultivators	Agricultural Labourers	Actual workers, Cultivating owners plus tenant cultivators	
	1941		1951	
Total figures ...	27,000,000	65,000,000	44,811,928	204,310,521
Ratio ..	415	1,000	402	1,000

According to 1951 census, out of a total rural population of 295 million, 249 million were engaged in agriculture and, of these about

¹ *Statistical Abstract of British India, 1915 onwards and Abstract of Tables, 1911 Census.*
² *Census Report, 1931, Vol. I, Pt. 1, p. 288.*
³ *Census of India, 1951, Vol. I, Pt. I-A.*

20% were returned as cultivating labourers and their dependents. Cultivating labourers represented a total population of about 49 million. More recently the results of the Agricultural Labour Enquiry Committee show that in India as a whole there are 17·6 million agricultural labour families, spread over a little more than half a million villages. The agricultural labourers thus form the largest group of labourers in our country—there being only 3 million persons employed in the factories. Of the total number of agricultural labour families, 1·5 million are in North India; 5·0 million in East India; 6·1 million in South India; 1·1 million in West India; 3·2 million in Central India and 0·5 million in North-West India. Agricultural labourers form about 30·4 per cent of the total number of rural families and 22·7% of the total number of both rural and urban families. The following table (p. 55) shows the total number of rural and agricultural labour families in different Census Zones and States.¹

It will be seen from this statement that in some States agricultural workers represent a serious problem, notably, in Bihar, Orissa, Madras, Mysore, Travancore-Cochin, Hyderabad, M. B. and M. P. Half of the agricultural labourer families are without land, and the rest are in possession of some land. The percentage of agricultural labour families without land varies from 8·6 in North India to 13·7 in East India; 22·8 in South India; 11·6 in West India; 22·1 in Central India and 7·6 in N.-Western India.

Type of Agricultural Labourers

Agricultural Labourers Enquiry Committee defines an agricultural labourer as a person who for more than half of the total number of days on which he actually works during the year is engaged in agricultural operations as a hired labourer.² Whereas an agricultural labour family is defined as "one in which either the head of the family or 50 per cent or more of the earners report agricultural labour as their main occupation."³ The Congress Agrarian Reforms Committee classifies agricultural labourers into three groups, *viz.*, (i) field labourers; (ii) ordinary labourers; and (iii) skilled labourers. (i) The field workers include ploughmen, reapers, sowers, weeders and transplanters. Majority of these are engaged in seasonal type of work, but some amongst these are employed all the year round. (ii) Ordinary labourers are employed in building embankments, digging, silt clearing and other like jobs. (iii) The skilled labourers include carpenters, masons, blacksmiths, and others who are employed by cultivators on the same rates as agricultural labourers. In these cases of labourers there is a substantial number of women and children—though among higher caste agricultural labourers

¹ Quoted by H. D. Malviya in *Village Panchayats in India*, 1956.

² *Agricultural Wages in India*, Vol. I., 1952, p. 1.

³ *Rural Man-Power and Occupational Structure*, 1954, p. 449.

Census Zones and States	Total Rural Population	Total No. of Rural Families (millions)	Total No. of Agricultural Labourer families (millions)	% of Agricultural Labour families to Rural families	Average Size of Agricultural Labour family
North India					
1. U. P. ...	54.6	11,056	1,563	14.14	4.2
East India	80.1	15,418	5,020	32.56	4.3
1. Assam ...	8.6	1,625	177	10.89	3.7
2. Bihar ...	37.6	6,694	2,661	39.75	4.5
3. Orissa ...	14.1	2,856	1,228	43.00	4.3
4. W. Bengal ...	18.7	4,000	932	23.30	3.9
South India	60.7	12,283	6,177	50.29	4.2
1. Madras ...	45.8	9,481	5,115	53.95	4.2
2. Mysore ...	6.9	1,286	540	41.99	4.3
3. Travancore-Cochin.	7.8	1,466	516	35.20	4.8
West India	28.0	5,179	1,104	21.32	4.3
1. Bombay ...	24.8	4,574	982	21.47	4.2
2. Saurashtra ...	2.7	494	89	20.04	4.5
Central India	44.1	8,237	3,285	36.55	4.6
1. M. P. ...	18.4	3,848	1,496	38.88	4.5
2. M. B. ...	6.5	1,234	280	22.69	4.8
3. Hyderabad ...	15.2	3,101	1,308	42.18	4.7
North West India	31.1	5,053	510	10.09	4.7
1. Rajasthan ...	12.7	2,110	202	9.57	4.4
2. Punjab ...	10.2	1,809	183	10.12	5.0
3. PEPSU ...	2.8	531	70	13.18	5.2
4. Jammu & Kashmir.	3.7	249	19	7.63	4.5
Total India ...	295.0	57,976	17,659	30.46	4.3

they form a small portion, but in lower castes, their number is considerable. Taking all the occupations together there are 465 females per 1,000 male workers. For certain agricultural operations—like weeding, sowing, grinding and transplanting—women are usually employed not because of their comparatively greater efficiency but because of lower wages they demand. Child labour is also common in such agricultural operations as weeding, husking, spreading manure, watching crops and carting. The age of such children ranges between 10 and 15 years and they are found to labour from 6 in the morning to late in the evening.¹

Agricultural Labour Enquiry Committee in their report distinguish between the "attached" workers and the casual workers. The former are those who are employed by the big *landlords* and whose employment is more or less continuous, and who are under some sort of contract with the employers during the period of employment. While the latter are "workers other than attached. They are employed from time to time according to exigencies of work."¹ The "attached" workers are employed for a period of time by the assignment of lodging on the farm, the mode of payment being determined by custom and tradition. They have to work for their masters and are not ordinarily free to seek employment elsewhere.² While the "casual" workers are paid at the market rate they are free to leave one job for another.³ The following table shows the relative proportion of "attached" and "casual" workers in some of the States⁴ :—

States	Percentage Casual to total number of workers	Percentage of attached workers
West Bengal	94.3	5.7
Assam	93.8	6.2
Bombay	85.7	14.3
Madras	92.4	7.6
Punjab	76.5	23.5
Travancore-Cochin	99.9	0.1
Hyderabad	87.2	12.8
PEPSU	26.1	73.8
Kutch	100.0	—
Coorg	95.3	4.7
Bilaspur	60.0	40.0

It will be observed that in contrast with Madras, very high percentage of 'attached' labourers are met with in the Punjab, PEPSU and Bilaspur, who receive as their principal income a share of the crop in kind. They are known as the *Sanjhis*.

In most cases the difference between "casual" and "attached" workers is stated initially in terms of period for which a man is engaged and whether or not he receives daily wages, *e. g.* in Assam, "attached" workers "were employed and paid on a monthly, half yearly or annual basis" while "casual" workers were employed

¹ *Report on the Intensive Survey of Agricultural Labourer*, Vol. I, 1955, p. 21.

² They are known as *Padiyals*, *Pannaiyals*, *Pulayas*, *Paleru*, *Jita* in South India.

³ *Agricultural Wages in India*, Vol. I, p. 400.

⁴ *Agricultural Labour Enquiry Committee Report*, Vol. I, p. 31.

on daily wages for short periods during busy seasons.¹ In Madras "attached" workers "were engaged for the whole year or during the busy season for a period of three to six months"; casual workers being "engaged either on time or on piece rates."² In PEPSU "casual workers were paid on a daily basis while attached workers were generally employed for longer periods on yearly, half-yearly or monthly agreements."³ In the case of Bihar, on the other hand, "a striking feature of agricultural employment . . . was the payment of daily wages both to casual and attached workers."⁴ Similarly in Rayalaseema area "some of the attached workers got daily wages even though the contract of employment was annual."⁵

Agricultural Serfs

At the bottom of the agricultural ladder in India are those labourers whose conditions are not very different from those of serfs. Agricultural serfdom is most prevalent in those parts of India where the lower and depressed classes are most numerous. In fact, the ethnic composition of the village, which governs the social stratification, is responsible for the survival of the slavish conditions. Thus in Bombay, Madras, Malabar, Cochin, M. P., Central India and Chhota Nagpur, we have a large aboriginal population, and the condition of the agricultural labourer is very much like that of a slave. An official report describes serf labour in the following terms: "The average agricultural labourer is not infrequently compelled in times of stress to mortgage his personal liberty. In return for a small sum of money which he may happen to need at the moment, he agrees to serve the man from whom he has borrowed. The money is not repaid, nor is it intended to be repaid, but the borrower remains a lifelong bond-slave of his creditor. For his work he merely receives an inadequate dole of food and to all intents and purposes is in the position of a medieval serf."⁶ This agrarian serf labour is regularised in such a manner that some of the regions have special name for it, e.g., *Hali* in Gujarat, *Kaimuti* in South Bihar, *Janouri* in North Bihar, *Gothi* in Orissa, *Pannialathiram* in Tamilnad, *Gassigullu* in Andhra, *Bhagia* in Hyderabad, *Sanwak* and *Hariyas* in Oudh, *Harwah* in Central India States, *Jeethan* in Karnatak and *Barsalia* and *Shalkari* in the M. P., *Haliyas* and *Chyoras* of Kumaon, *Chakar* in Orissa, *Padials* in east Madras, *Dublas* and *Kolis* in Bombay.⁷ These serfs serve in their masters' households,

¹ *Agricultural Wages in India*, Vol. I, p. 55.

² *Ibid.*, p. 114.

³ *Ibid.*, p. 247.

⁴ *Ibid.*, p. 68.

⁵ *Ibid.*, p. 120.

Cf. for Punjab, U. P. and West Bengal, p. 151, 165 and 182.

⁶ Quoted by Dinker Desai, *Agrarian Serfdom in Indian-Sociologist*, July, 1942.

⁷ For a detailed nomenclature of such workers refer to *Agricultural Labour Enquiry Committee Report*, Vol. I, p. 32.

They may have received money for their marriage expenses giving an undertaking to serve till they pay off their debt. They are fed and clothed by their masters. On the East Coast of Madras similarly, many of the agricultural labourers are *Bariahs* who are known as *Padials*. The *Padial* is a serf who has fallen on hereditary dependence on a landowner from whom he has borrowed money. The money may have been borrowed either for his own marriage or for that of his son or daughter. The borrower undertook to work for the lender until the debt was repaid. Such loans, however, are never repaid and the *Padials* themselves being attached to the soil, go with the land when it is sold or the owner dies. In Madras, the *Padial's* wages are paid in kind equivalent to Rs. 3 per month in terms of money.

In Orissa, there are three kinds of labourers: (1) The *Chakar* or *Baramasiya* labourer engaged for 12 months with board and lodging and Rs. 24 in cash. His ancestor may have obtained a loan from his employer. (2) The *Naga Muliya*, who also works as a yearly servant, but receives instead of board and lodging 4 seers of paddy and a plot of land to cultivate free of rent. (3) The *Danda Muliya*, who is employed for a short period on specified wages. In Bihar, there are the *Kamias* or bond-servants who having borrowed money, bind themselves to perform whatever menial services are required of them by their masters. These depressed castes who have no land or security pledge their labour, whenever they want a loan; and not only their labour but that of their dependents also. Very often it happens that the joint wages of the *Kamia* and his wife are not sufficient to feed them and their children.

In South Gujerat *Halis* serve their creditors from year to year being unable to pay the loan during their lifetime. The *hali* has been called an indentured labourer, a freeman *de jure* but a serf *de facto*.¹ The region of the Tapti river has about a lakh of serfs. They go on drudging from year to year and effect an escape from the drudgery either by death or by running away to a distant place from their village.²

Forced Labour

Conditions of forced labour seem to prevail all over the country. Writing about the aboriginal population of the Thana District one officer reports, "All jungle tract tenants who cultivate by 'Khad', (*i.e.* those who pay fixed rent in kind, and not a crop share) are liable to be called upon to work for their landlords... If they refuse or procrastinate they are liable to assaults or beatings... I was told on credible authority of men being tied up to posts and whipped. Such occurrences I can vouch for. There are also rumours of men in the

¹ *Bombay Census Report*, 1921, Pt. I, p. 20.

² J. B. Shukla, *Life and Labour in Gujerat Taluka*, p. 118.

past having been killed." This system of exacting forced labour from cultivating tenants exists in almost all the States. Dr. Lorenzo describes various forms of *begar* prevailing in North India. They are (i) *Beth Begar* under which labourers are forced to perform agricultural operations for 2 to 5 days, e.g., ploughing (Hal Beth), weeding and watering (Kodal Beth), harvesting the crop (Dhan Beth) or threshing the crop (Miseni Beth). (ii) *Chakran Begar* under which labourers living on landlords' land have to work for 2 or 3 days in lieu of the rent. (iii) *Perjanta Begar* under which in time of emergency the labourers have to render 3 to 12 days' labour to the landlords.

The Agricultural Labour Enquiry Committee calls 'begar' as "involuntary labour." It observes that it is a characteristic feature of our agricultural economy. It prevails generally among the attached workers. With a view to making the attached workers they remain in service for a long time, it is usual for landholders to advance loans or allot plots of land free of interest or rent. e. g., in U. P. the workers usually remain attached to the same employers for successive years, the "reason being that employers generally advance loans ranging from Rs. 200 to 400 per annum to the attached workers and also gave them a plot of land (generally 2 bighas) either on a nominal basis or free rent."¹ In Bihar, "an attached worker was usually advanced a sum of Rs. 50 to Rs. 100 at the beginning of the year and unless and until he returned the sum, he was not permitted to leave his employer."² The inability of workers to repay the advances has led to certain practices of exacting labour either at nominal wages or without them. Thus a type of indentured labour prevails in certain States.³

Apart from *begar* or *both* (forced labour), there is a system of levying *abwabs* or illegal exactions which survives in Bengal and Bihar. It has reduced the cultivators to semi-serfdom. Some times these exactions take the form of the marriage fees, sometimes they are taxed for carrying on certain trades. These exactions deprive the peasantry of a large portion of their already meagre income. The *abwab* is employed not only as an engine of financial extortion but of physical oppression. "In Rajshahi," according to a Settlement Report, "landlords wield a sort of sovereign power dispensing justice and imposing taxes." According to another report, "In some of the remoter parts of Pabna, the zamindars' agents still assume summary but unauthorised magisterial functions, fining and, at times, imprisoning those whom they convict." Added to all this is the process of gradual expropriation of the cultivators by money-lenders driving the aboriginals into the ranks of servile tenants

¹ *Agricultural Wages in India*, Vol. I., p. 68.

² *Ibid.*, p. 166.

³ *Agricultural Labour Enquiry Committee Report*, Vol. I., p. 45.

liable to forced labour and to the payment of illegal exactions. Agrarian serfdom thus lingers on in India—a relic of the Middle Ages which might be regarded as one of the darkest blemishes in the economic life of present-day India.

Demand for Rural Labour

The demand for labour in agriculture is highly seasonal. There is a peak demand for labour in the harvesting seasons and next to that in times of transplanting and weeding most of which are done by women. Men are required mainly for the operations of ploughing, levelling, digging trenches, forming beds and bunds, hoeing and irrigating all of which require strenuous physical labour. Generally speaking for crops grown on dry (rain-fed) lands, or on wet lands (canal-irrigated) more women are required than men. It is only on 'Garden lands' with wells from which water is lifted by bullock power that more men are required than women.

The labour hired in fields depends upon the size of holding and the nature of cultivation or crops raised, *e. g.*, in the Kanam tract of the Baroda district for a farmer with a holding of 25 bighas producing cotton, juar, tur and a few other pulses and with members of the family including the farmer, to work in the fields there was no necessity to employ hired labour. But on another holding of almost equal size in Surat made of 2 bighas of irrigated land raising vegetables, $5\frac{1}{2}$ bighas of paddy land and 17 bighas of grassland and with 9 members of the family including the owner to help in cultivation paid labour came to about 10% of the total requirement. The period of employment in the year varies from 5 to 7 months in the regions raising dry crops to as high as 9 to 10 months for irrigated crops.

Generally the members of the families of the farmers supply most of agricultural labour needed on the fields. Labour is hired only occasionally during busy seasons and the percentage of such labour ranges from 10 to 20 per cent of the total labour required during the year. Instances are common in which although higher labour may be necessary during certain important field operations, poor farmers cannot employ outside labour for want of resources to pay wages with the result that crops suffer damage and the yield to the farmer from lands comparatively becomes low. Besides, under a peculiar system (most prevalent in the Bhil tracts of the Bombay presidency and the Mewar State) friends and relatives mutually help each other on the fields. The friend or relation so helping gets $\frac{1}{2}$ lb. of boiled maize every day at noon and takes his or her morning and evening food at home.

Supply of Rural Labour

The ample supply of rural labour and the multiplication in the number of landless labourers have brought about agrarian unsettlement in India. They hang about the countryside and add

to the already existing inefficiency of agriculture. They are an obstacle to the introduction of improved methods of cultivation. Speaking at the Agricultural Labourers' Conference in 1940, Dr. Pattabhi Sitaramayya said, "A series of intermediaries has come into being between the Government and the ultimate cultivator who spends the day between slush and mud, who works now with a starving stomach and now with a half-appeased appetite, who knows no rest in storm or sunshine, who oftentimes has no dwelling site which can be called his own. He grows our paddy but starves. He feeds our milch cows but never knows anything beyond kanjee and water, he fills our granaries but has to beg each day rations for the rest of the year. He digs our wells but must keep off from them when they are full. He is a perpetual hewer of wood and drawer of water for those who fatten on his labour and rise to wealth and plenty. His condition is appalling and heart-rending."

The State and the public have done almost nothing to alleviate the economic position of the mainstay of rural parts. The administrators, politicians and the economists have not done anything in spite of their schemes of improvement of agriculture and rural development. The labour is no doubt plentiful but it gets seasonal work and it is without work half the year round. The rural labour supply is so great that it can cultivate land on any term even beyond the cultivators' paying capacity.

Recruitment of labour in all agricultural operations and rural Indian pursuits has a direct and complementary relationship with caste groups. In many cases not only does caste determine the nature of occupation, but different occupations give birth to various subcastes hitherto unknown.

The outstanding features of labour supply in agriculture are summarised below :—

1. Owner cultivators and high class tenants generally belong to high castes whose hereditary occupation has been cultivation. *e. g.*, Brahmins, Rajputs, Thakurs, Kayasthas, Tagas, Syeds and Pathans.

2. Farm hands are recruited both from high and low castes. Usually they belong to the caste of the employer. The majority of this class considers agriculture as its principal, though not hereditary occupation, *e. g.*, Kunbis, Vaishyas, Gujars, Ahirs, Jats, Sheikhs and Pathans.

3. Field workers are recruited mostly from lower castes which have agriculture as their subsidiary occupation, *e. g.*, julahas, Lodhs, Chamars, Kumhars, Telis, Khatiks and Koris.

4. Landless floating hands are recruited from the lowest rung of the social ladder. They are recruited mainly from Doms, Dusadhs, Bhuiyas, Pahariyas, Dhimars, Ghatwars, Kols and Koris.

INCOME OF AGRICULTURAL LABOURERS

Census Zones and Major States	Income	
	Total Annual income per family (Rs.)	Per Capita Income (Rs.)
All India	447	104
North India	551	131
East India	506	118
1. Assam	610	162
2. Bihar	534	119
3. Orissa	340	79
4. West Bengal	622	159
South India	382	91
1. Madras	365	87
2. Mysore	396	92
3. Travancore-Cochin	541	113
West India	391	91
1. Bombay	368	88
2. Saurashtra	579	129
Central India	417	51
1. Madhya Pradesh	390	87
2. Madhya Bharat	399	83
3. Hyderabad	455	97
North West India	651	139
1. Rajasthan	604	137
2. Punjab	607	121
3. PEPSU	913	176

The annual per capita income of an Indian agricultural labour works out as Rs. 104, as against per capita income of Rs. 264 the entire Indian population. It is as low as Rs. 79 in Orissa, Rs. 83 in M.B., Rs. 87 in Madras and M.P. and Rs. 88 in Bombay. In 1950-51, all the agricultural labour families in India (which formed 22·7% of the total number of Indian families), got only 8·3% of the net national income.

Agricultural labourers as a class are extremely poor not only in comparison with the rest of the community taken as a whole but even in comparison with other class of labour. Shri A. C. Guha, while introducing the State Bank Bill in the Lok Sabha on April 23, 1955, told the House: "In West Bengal the income of agricultural labourer is Rs. 160 per year while the income of the industrial labourer is Rs. 268, which means the agricultural labourer gets only 59% of what the industrial labourer gets. In Bihar, it is Rs. 119 for agricultural labourer and Rs. 332 for industrial labourer, the percentage being 36. The corresponding figures for Orissa are Rs. 79 and Rs. 145, the percentage being 54; for Punjab Rs. 121 and

Rs. 261, the percentage being 56; for Bombay it is Rs. 88 only for agricultural labourer and Rs. 368 for industrial labourer the percentage being 24."

The Intensive Family Survey found the average size of an agricultural labour family to be 4·7—consisting of 2·0 earners; 0·7 helpers and 2·0 dependents—as compared to the size of the owner family 5·45 and of tenant family 5·39. Amongst the agricultural labour families, the landless have only 4·1 persons per family. The per capita family annual income of agricultural labourers derived from different sources is given below :—

States	Cultivation of land	Agricultural Labourer	Non-Agricultural Labourer	Occupations other than farming	Others	Total
U. P.	62	380	56	41	12	551
Assam	45	417	98	32	9	601
Bihar	57	342	65	60	10	531
Orissa	59	190	66	16	9	340
W. Bengal	45	404	102	61	10	622
Madras	76	226	31	22	10	365
Mysore	87	202	49	53	5	336
Travancore-Cochin	30	384	77	45	5	541
Bombay	27	270	39	26	6	368
M. B.	48	214	64	47	26	399
M. P.	45	289	40	10	6	390
Hyderabad	67	272	48	52	16	455
Rajasthan	167	306	51	70	10	604
Punjab	24	352	94	56	81	607
PEPSU	7	658	63	53	126	913
All India	60	287	53	36	11	447

The Family Budgets

The fact of the extreme poverty of the Indian agricultural labour is corroborated by the standard of living of the average agricultural labour family as indicated by the pattern of its expenditure.

According to the findings of the All India Agricultural Labour Enquiry Committee, the annual income per agricultural labour family was Rs. 447 and the average annual expenditure Rs. 468 (including Rs. 7 incurred on ceremonies). There was thus a deficit of Rs. 21. An idea of the poor level of living can be had from the

fact that out of Rs. 461 spent on recurring items of expenditure, as much as Rs. 393 or 85·3% was spent on food and Rs. 29 or 6·3% on clothing. The average annual expenditure on the rest of his necessities viz. shelter, fuel, and lighting and miscellaneous items like tobacco liquor, washing soap and medicine, etc., came to only Rs. 39 or 8·4% of the total expenditure. At least 79·2% of their total expenditure on food are for cereals. Only 5% of their food budget is accounted for gur, sugar, vegetables, fish, meat, eggs, etc. The following statement gives the actual and percentage expenditure on consumption groups for the different zones and for India as a whole¹—

The most striking feature of the budgets of agricultural labourers is the high percentage of expenditure on food alone, being 85·3 per cent. as against 39 % for U. S. A. ; 55 for Russia and 56 for Holland²—which is an index of the low standard of living of the labourers.

Another important feature of these budgets is that in the majority of cases, the percentage of expenditure on physiological and basic requirements (food, clothing, rent, etc.) is the highest whereas the percentage of expenditure on non-physiological and secondary requirements (i.e. social and religious recreations, education of children, etc.) is almost negligible. Moreover, the percentage of expenditure on non-physiological and secondary requirements is higher in the case of urban industrial workers than in the case of agricultural workers in rural areas, which again is a sure index of the low standard of living of the agricultural labourers when compared with their confreres in their urban areas³ :

	Per cent of expenditure Physiological and Basic Requirements	Non-Physiological and Secondary Requirements
Average Agricultural Labourer (Rural)	88·9	11·1
Average Industrial Labourer (Urban)	73·8	26·2

The food taken by the labourers is far from satisfactory. Many do not get the required quantity nor get the requisite quality. It is said that if epidemics slay thousands every year malnutrition kills millions. Their diet usually consists of inferior cereals like jowar, bajri and millets with some pulses. Green vegetables are

¹ B Ramamurti, *Agricultural Labour—How They Work and Live*, 1954, p. 31, 45.

² Suokin, Zimmerman, *Systematic Source Book in Rural Sociology*, Vol. III, p. 371.

³ Lorenzo, *Agricultural Labour Conditions in Northern India*, p. 120.

AVERAGE ANNUAL EXPENDITURE PER AGRICULTURAL LABOUR FAMILY

	Average annual income per family	Average Annual Expenditure per family	Average Annual Expenditure on				House rent Services and				Total		
			Food	Clothing and footwear	Fuel and Lighting	Repairs and Miscellaneous	Rs.	%	Rs.	%			
Northern India	...	551	464	84.7	43	7.8	6	1.1	4	0.7	31	5.7	548
East India	...	506	464	87.9	26	4.9	6	1.1	5	1.0	27	5.1	528
South India	...	382	323	81.3	27	6.8	5	1.3	5	1.3	37	9.3	397
West India	...	391	327	83.4	34	8.7	7	1.8	2	0.5	22	5.6	392
Central India	...	417	374	87.4	26	6.1	4	0.9	1	0.2	23	5.4	428
N. W. India	...	651	571	84.7	52	7.7	6	0.9	3	0.5	42	6.2	674
All India	...	447	393	85.3	29	6.3	5	1.1	4	0.8	30	6.5	461

taken only on festive occasions. Ghee and milk are rarely included in the diet. They take their daily diet at about 12 a.m. in the noon and the meal in the evening after returning from the field. Often millet or barley bread and chillies and some salt are taken. The labourers as a class are more addicted to drink than others. They drink country liquor made of rotten barley and mahua seed. Whether the liquor injures health or not the addicts are economically at a low level. Whatever they earn they spend away, more at the *Kalal's* shop than for the household. This results in deterioration in their financial status and their children and womenfolk suffer privation.

The proportion of basic foods to energizing foods consumed by various classes of agricultural labourers in some provinces of Northern India is as follows¹:

1. Food Budget of well-to-do cultivators showing the percentage of basic to energizing foods:—

Province	Total of food consumed oz.	Basic foods oz.	Percentage to the total	Energizing food oz.	Percentage to the total
Punjab	58	31	53.4	27	46.6
U. P.	42	20	47.6	22	52.4
Bengal	36	19	52.8	17	47.2

2. Food Budget of landless agricultural labourers and field workers showing the percentage of Basic to Energizing Foods.

Province	Total amt. of food consumed oz.	Basic foods oz.	Percentage to the total	Energizing foods oz.	Percentage to the total
Punjab	49	40	81.6	9	18.4
U. P.	33	29	87.9	4	21.1
Bengal	28	22	77.8	6	21.4

3. Food Budget of Agrestic serfs showing the percentage of Basic to Energizing Foods.

Consumers	Total Amt. of food consumed	Basic foods	Percentage to the total	Energizing foods	Percentage to the total
Sewaks (Oudh)	21	21	100	...	...
Kamias (Bihar)	22	20	90.9	2	9.1

¹ Lorenzo, *Op. Cit.*, p. 125-26.

Agricultural labour forms an integral part of the rural population and as such their economic conditions are intimately linked up with those of other rural families. In the following table, a comparison has been made of the agricultural labour families with that of all rural families in respect of the level and content of their living¹ :—

ANNUAL PER CAPITA EXPENDITURE (%)

Consumption Group	Agricultural Labour families		Rural families	
	(A. L. E. (1950-51))		N. S. S.- (1949-50)	
I—Food	...	85.3	...	71.4
Food-grains	..	4.0	...	41.7
Pulses	...	1.0	...	3.9
Vegetables	...	2.3	...	2.5
Edible oil	...	0.7	...	4.1
Milk and Milk Product	...	1.4	...	8.4
Meat, fish and Eggs	...	1.1	...	2.3
II—Fuel and Lighting	...	0.8	...	3.5
III—House-Rent	...	0.3	...	0.6
IV—Clothing and Foot-wear	...	6.5	...	13.4
V—Services and Miscellaneous	...	6.5	...	11.1
Tobacco	...	2.3	...	1.9
Intoxicants	...	0.7	...	0.8
Total Expenditure	..	100.0	..	100.0

Judged by the per capita expenditure of Rs. 107 of agricultural labour families as against Rs. 204 of all rural families, the level of living of agricultural labour families is deplorably poor.

The labourer and his family fall easy prey to several diseases due to malnutrition and unhealthy conditions of living as they are usually under-fed, ill-housed and ill-clothed. Between hook-worm and malaria at least 20% of the working days may be lost by the labourers. The Agricultural Labour Enquiry Committee attributed the poverty of the agricultural labour families to the following causes :—

- (i) Inability of the agricultural industry to provide adequate employment to agricultural labour families;
- (ii) Lack of opportunities for self or non-agricultural employment;
- (iii) Low wages paid for earned work.

¹ B. Ramamurti, *Op. Cit.*, p. 41.

EMPLOYMENT, UNEMPLOYMENT AND UNDER-EMPLOYMENT OF AGRICULTURAL LABOURERS

The number of days of employment on wages of agricultural labourers in different zones are as follows:—

Zones and States	Men			Women		
	Agricultural Labour	Non-Agricultural Labour	Total	Agricultural Labour	Non-Agricultural Labour	Total
North India						
U. P. ...	255	34	289	119	24	143
East India .	182	42	224	99	24	123
Bihar	167	33	200	91	20	111
Orissa ...	199	57	256	113	37	150
West Bengal	200	46	246	152	36	188
Assam ...	208	48	256	136	19	155
South India	160	21	181	132	7	139
Madras ...	159	19	178	134	6	140
Mysore ...	130	24	154	120	10	130
Travancore-Cochin	185	30	215	133	14	147
Central India	221	24	245	125	16	141
M. P. ...	239	16	255	112	14	122
M. B. ...	173	48	221	108	28	131
Hyderabad	212	23	235	141	18	199
West India ...	176	20	196	103	13	116
Bombay ...	173	20	193	102	11	113
North West India	177	25	202	98	17	115
Rajasthan ...	162	22	184	113	12	125
Punjab ...	164	24	188	35	29	64
PEPSU ...	273	8	281	50	1	51
All-India ...	189	29	218	120	14	134

On an average, an adult male was engaged in agricultural labour for 189 days, in paid non-agricultural labour for 29 days and was self-employed for 49 days, while he found no work for 98 days or about 27% of the total number of days in the year. Here again, the position varied from state to state, the agricultural labourers in North India being employed for 50 days in the year and in West India for 123 days, in East India for 92 days; in South India for 113 days, in Central India for 75 days and in North-West India 99 days.

State-wise, the position was worse in Madras (119 unemployed days), Bombay (118 days), Punjab (118 days), Travancore-Cochin

(115 days), and Bihar (107 days), while it was relatively better in the States of PEPSU (59 unemployed days), Orissa, (58 days), and U. P. (50 days) with other States following in between these extremes.

The position is even worse so far as the women labourers are concerned. Taking India as a whole, the women agricultural labourers could get, as an average, hired employment on 120 days in agricultural and 14 days in non-agricultural labour. In West Bengal a woman labourer worked for wages on 188 days in the year, in Punjab she worked only for 64 days and in PEPSU for 51 days. Employment opportunities of women labour have tended to decrease in so far as house industries, like hand pounding of rice or hand-spinning have been supplemented by large-scale factories, for rice-milling, spinning, etc. To that extent the income for the family as a whole has been adversely affected.

Another significant fact brought about by the A. L. E. Committee is that 79% of the agricultural labourers in India could get no other work than paid employment on land and only 21% had any subsidiary occupation. The percentage of agricultural labourers having subsidiary occupation varied from 30% in East India and West India to 16% in Central India. The main reason for not finding the subsidiary occupations is lack of finance with which the agricultural labourers could provide themselves with means of self-employment.

Hours of Work

Hours of work vary from place to place, season to season and from crop to crop. Practically all the work has to be done in sunlight. Invariably the early cool hour of the morning and occasionally the moonlight nights are utilised for the arduous work of lifting water by the bullock mote or the persian wheel. Cattle threshing is taken up in the early hours of the morning. Animals have to be fed before milking or taking out for work early in the morning. In Bengal the hours of work for field labourers are from 6 a.m. to 1.30 p.m. and again from 3.30 p.m. to 6 p.m. In Madras field labourers are sometimes required to work with two intervals from 4.30 a.m. to 6 p.m. but the regular hours of labour are from 6 a.m. to 6 p.m. In Bombay men are engaged for one-year work from 7 a.m. to 6 p.m. In U. P., the hours are from 4 p.m. to 11 a.m. followed by afternoon work for cattle. In the rains regular hours are from 7 a.m. to 6 p.m. In most parts of India there is usually a recess of one or two hours at midday for food. Everywhere the hours are adjusted to summer and winter conditions. Sometimes the agricultural labourer is required to work 24 hours a day including night watch.

Low Wages

Low wages in most areas for paid labour in agriculture is another feature of the rural life. The average daily rates of

agricultural labourers in different zones and major states are given below:—

Zones and States	Men (in Annas)	Women (in Annas)
North India (U. P.)	18.8	16.8
East India	19.9	15.7
West Bengal	27.0	16.6
Bihar	20.2	17.7
Orissa	11.5	7.9
Assam	29.8	21.9
South India	16.2	9.8
Madras	15.5	9.5
Mysore	14.6	9.4
West India	18.0	12.5
Bombay	17.6	11.8
Saurashtra	21.5	19.5
Central India	12.8	8.2
M. P.	12.8	7.9
M. B.	13.7	9.4
Hyderabad	13.1	8.0
N. W. India	22.8	15.8
Punjab	28.6	21.1
PEPSU	45.0	13.7
Rajasthan	19.7	15.2
All-India	17.5	10.8

This table shows that the average wage is highest in N. W. India (23 annas) followed by East India (20 annas) and the lowest is recorded in Central India (13 annas). The average shows considerable variations among the States. While the average is 27.8 annas in Assam, and 27 annas in West Bengal, it is as low as 11.5 annas in Orissa; and 19.7 annas in Rajasthan; In Travancore-Cochin 21.4 annas and only 15 annas in Madras and Mysore. The all-India average daily wage of a woman worker (10.8 annas) is lower than even the lowest wage of a male worker (11.5 annas in Orissa). It is highest in North India, being 17 annas followed by N. W. and East India (about a rupee) and lowest in Central India (8 annas).

The following table gives the average daily wage of 'Casual' and 'attached' male workers in different zones:—

(IN ANNAS)

Zones	Casual	Attached
N. India	18.8	15.0
E. India	19.9	11.5
S. India	16.2	12.5
W. India	18.0	12.8
C. India	12.8	10.6
N. W. India	22.8	22.4
All-India	15.8	12.3

In the villages, the level of money income is lower than in the industrial areas, as will be evident from the figures given below¹ :—

COMPARATIVE WAGE RATES IN AGRICULTURE, FACTORY AND PLANTATION

States	Agriculture (1950-51)	Plantations (1950-51)	Factory Industries (1950)
1	2	3	
Assam	29.8	18.5-20.5	60.8
Bihar	20.2	—	68.8
Bombay	17.6	—	67.2
Madras	15.5	19.5-21.8	33.6
Travancore-Cochin	21.4	20.0	—
M. P.	12.6	—	52.8
Orissa	11.5	—	38.4
Punjab	28.6	—	44.8
U. P.	18.8	—	52.8
West Bengal	27.0	19.5-21.5	45.6
All India	17.5		54.4

The factors responsible for lower wages of the agricultural labourers are :

- (i) The absence of any regulation forbidding child labour. This is responsible for increased labour supply in agriculture and a lowering of wages.
- (ii) Land monopoly, as was prevalent till recently, resulted in the formation of a 'Labour Reserve' under the *Zamindar*, *Malguzar*, *Thekedar* and the *Mahajan*, who advancing them substantial loans obtained a permanent

¹ B. Ramanurti, *Op. Cit.*, p. 23.

grip over them. Debt bondage is the principal cause of low wages.

- (iii) The unorganised scattered nature of agricultural labourers and the seasonal character of agricultural operations reduce their bargaining capacity.
- (iv) The concentration of land in the hands of upper castes (whereas the agricultural workers come mostly from the depressed classes), leads to social and economic exploitation.
- (v) They have no Trade Unions to fight for wage increase and better conditions of work.

The following tables give daily agricultural wages and Rural Wages in some of the States¹ :—

DAILY AGRICULTURAL WAGES

Village	Normal Daily Working Hours	Field Labour			Other Agricultural Labour		
		Man	Woman	Child	Man	Woman	Child
Vepagunia (Andhra)	8	1 8 8	0 8 0	0 6 0	1 0 0	0 10 0	0 6 0
Rangchul (Assam)	8	2 8 0	...	...	2 8 0	...	...
Gunpar (Bombay)	8	1 8 0	1 0	0 12 0	1 8 0	1 0 0	0 12 0
Midnapur (W. Bengal)	7	1 4 0	1 0 0	...	1 4 0	1 0 0	0 10 0
Haisaudra (Mysore)	6	1 6 0	0 8 0	...	1 0 0	0 8 0	...
Ugamedl (Saurashtra)	8	1 8 0	1 8 0	1 0 0	1 8 0	1 4 0	1 0 0
Balad (Ajmer)	8	0 12 0	0 8 0	0 8 0	...	...	...
		to	to	to			
		1 0 6	0 12 0	0 12 0			
Schore (Bhopal)	7	1 8 0	1 4 0	0 12 0	1 4 0	1 0 0	0 12 0

¹ *Agricultural Situation in India*, Oct. 1956, p. 952-54.

DAILY RURAL WAGES IN SOME STATES

Village	Normal D. Working H.	Skilled Labour						Herdsman		
		Carpenter		Blacksmith		Cobbler		Man	Woman	Child
Rolapudi (Andhra)	8	1	8 0	1	0 0	1	0 0	1 0 0	1 0 0	0 14 0
Thana (Bombay)	8	4	8 0	5	0 0	4	8 0	1 8 0	1 0 0	1 0 0
Tirunelveli (Madras)	...	2	0 0	1	8 0	1	4 0	0 12 0	...	0 8 0
Ferozpur (Punjab)	8	4	0 0	4	0 0	N. A.	N. A.	N. A.	N. A.	N. A.

Formerly, the method of wage payment differed from class to class and from region to region. Both cash and crop wages were paid on a daily or monthly basis. But since the War years, payment in cash, partly or wholly, has come very much in vogue. Sometimes perquisites in the form of mid-day meal, tea or tobacco, varied according to local customs is also given, *e. g.*, in the eastern parts of U.P. the wages range from 2 to 4 annas per day to Rs. 1 or Rs. 1/8 per day in the western parts. These wages are supplemented by wages in kind—chabena, grain parched or boiled, *sharbat* of an inferior kind of sugarcane juice, tobacco, etc.¹ In Madras, casual workers were paid in cash or in kind, payment varying from Re. 1 to annas 8 a day.² In Bombay, in an enquiry of 900 villages it was found that cash wages without supplement were usual in 233 villages and grain wages in 376 villages. Wages in kind were about 5 seers of jowar, while cash wages were 8 to 10 annas a day in the more prosperous villages.³

The Agricultural Labour Enquiry Committee revealed that of the total wage-employment in agriculture in India, 57.7% of man-days are paid in cash; 32.2% in kind and the balance is paid partly in cash and partly in kind. In N. W. India and West India, cash payment accounts for 79 and 76% of man-days; and in S. India 66% but in Central and East India cash wages are not so important, being paid only for 46 and 50% of man-days. The mixed system accounts for a little over 10% of the total man-days in Central and South India. The predominance of wages in kind in East India is due to Bihar where wages for 55% of man-days are paid in kind; kind wages are also more important in Hyderabad 33%; Orissa 37%; Punjab, 32% and U.P. 35.5% and M.P. 53%.

¹ Shridhar Misra, *Rural Wages in U.P.*, p. 21.

² *Agricultural Labour Enquiry Committee Report*, Vol. I, p. 114.

³ *Congress Agrarian Reforms Committee*, p. 116.

Cash wages are more important in Saurashtra 86%; Bombay 75%; West Bengal, 82%; Assam 96% and Hyderabad, all of which States have greater sown area under commercial crops. In the Punjab, cash and kind payments are of about equal importance.

Besides, wages are paid either on time or piece basis. The percentage man-days of men, women and child labourers paid under different modes of wage payment in important States and Zones is given below:—

Zones & States	Time Rates	Piece Rates	Cash	Kind	Cash & kind	With perquisites	Without perquisites
N. India (U.P.)	97.9	2.1	56.1	35.5	8.4	62.2	37.8
East India	88.7	11.3	50.1	42.5	7.4	50.9	49.1
Bihar	83.2	16.8	41.9	54.6	3.5	42.1	57.9
Orissa	96.9	3.1	41.9	37.6	20.5	9.2	90.8
Bengal	96.7	3.3	81.6	13.1	5.3	84.4	15.6
S. India	97.6	2.4	65.6	21.4	12.7	30.5	69.5
Madras	98.2	1.8	65.9	21.7	12.4	28.4	71.6
Travancore-Cochin	93.0	7.0	65.6	23.3	11.1	44.1	55.9
West India	98.8	1.2	75.8	18.2	6.0	21.1	78.9
Bombay	99.4	0.6	75.2	19.3	5.5	18.0	82.0
Central India	94.0	6.0	46.2	42.6	11.2	1.7	98.3
M. P.	87.9	12.1	37.6	53.0	9.4	0.4	99.6
M. B.	97.2	2.8	77.4	16.7	5.9	4.8	95.2
N. W. India	99.4	0.6	78.8	13.1	8.1	21.6	78.4
Punjab	97.4	2.6	35.2	32.1	32.7	29.3	70.7
Rajasthan	100.0	—	92.0	4.8	3.2	12.9	87.1
All India	94.5	5.5	57.7	32.2	10.1	33.4	66.6

Out of the total number of man-days put in by casual agricultural workers of all types, men contribute 62%; women 35% and children 3%. Casual workers, forming 85% of the total number of agricultural workers are all employed on daily wages. The rate of wages depend on the type of agricultural operation they perform. Of the total man-days put in by casual agricultural labourers, only 5.5% are paid at piece-rate. While time wages are paid for most of the agricultural operations, piece wages are paid usually for such operations as embanking, harvesting and weeding. Piece-wages are also paid wherever work has to be done expeditiously.

Housing Conditions

Agricultural labourers occupy the worst quarters and the worst huts in the villages. Men sleep on the *pial* or in open air six months

in the year. But the hut gets so overcrowded in the rainy and winter months that the inmates may be said to be couched rather than housed. Floor and walls get damp. There are no windows or chimneys for the foul air to escape from the huts. In certain cases even the sunlight does not penetrate in the interior so that it is always dark inside. These conditions lead to all sorts of fever, particularly relapsing fever which rages for months. Infant mortality is high.

Numerous cases have been found where the inmates sleep along with cattle and livestock. In Jaunpur the huts generally consist of only one dingy room with kitchen, dormitory, parlour and in many cases cattle-shed combined.¹ In village Hathwa (Gorakhpur), Mr. Mathur found that, 'a hut measuring 7×12×5 ft. was occupied by 5 persons and a goat and the inmates were thin, diseased and dirty.'²

In village Sheikhdhir (Bahraich), it was found that two bullocks, fishing tackle and four members of Oriya caste labourers family were packed into a dark and stingy house measuring 14×14×7 ft.³ Too often, therefore, a village family has for a home a dwelling which is scandalously below its needs, besides being leaky and unhealthy.

"To many peasants", observes Dr. Mukerjee, "the huts are simply places where one can stretch his legs and sleep in the night, and in several instances the loss of privacy blunts all sense of shame and decency. Men and women, young and old, sometimes may be seen packed together along with cattle and goats in winter, and the home that should radiate noble social and aesthetic influences, is a den of misery and disease where people breed and die like fruit flies."⁴

In brief, labourers habitually live in conditions of filth and dirt around them and with disease and debility hanging like a sword above them suspended by a hair.

Indebtedness

The Agricultural Labour Enquiry Committee have found out that 45% of the agricultural labour families are in debt (i.e., 7·8 million), the average debt being Rs. 105 per family. In Central India the percentage of indebted families is 55. The main purpose for which the debts are incurred is consumption, which accounts for Rs. 78 out of a total of Rs. 105. This shows the inefficiencies of the agricultural labour families to meet even their primary necessities.

¹ B. Misra, *Over-Population in Jaunpur*, p. 55.

² Mathur, *Pressure of Population in Gorakhpur*, p. 48.

³ Lorenzo, *Agricultural Labour and Marketing in Oudh*, 1932, p. 67.

⁴ Mathur, *Op. Cit.*, Introduction by Dr. Mukerjee.

The average debt per family varies from Rs. 32 in North India to Rs. 76 in East India, Rs. 102 in South India, Rs. 108 in West India, Rs. 103 in Central India and Rs. 335 in N. W. India.

Employers, moneylenders, friends and relatives play a prominent role in advancing loans to agricultural workers while the part played by co-operatives and shop-keepers is insignificant.

Difficulties in the Way of Improvement

The foregoing description of the conditions of living and working of the agricultural labourers has made it clear that their position is worst and it deserves serious attention of those who are interested in the uplift of rural workers. The difficulties to ameliorate the conditions of rural labour are many. They are both foreign and indigenous. Capitalists and industrialists, landlords and cultivators, rulers and the ruled have all some kind of vested interest in it. Further, the farmers are obviously against any measures aimed at bringing any enlightenment to the masses whom they exploit. In such hostile atmosphere and after the day's hard work it is also difficult for the labourer to so equip himself as to learn the three R's. The age-old intellectual lethargy of the illiterate too plays its part in blocking the way to progress. The existence of the minority groups who do not take to manual labour and community problems have all intensified the situation. These difficulties will only disappear, if a proper plan for national life is drawn taking all its phases into consideration.

The problem of rural labour is no doubt a difficult one but by a careful study a determined effort should be made to educate the labourer so that he could think for himself, read for himself, and act for himself. To be frank the problem of rural labour deserves the immediate attention of all. All services, institutions, establishments and other accessories essential to the growth, nourishment, education and training of rural labour should be operated at public cost. Parental care and affection, and an atmosphere of family life are considered to be a very important factor in the normal, mental and physical make-up of the labourer. Marriage should be nationalised. There should be redistribution of population with readjustment to make agriculture with all its subsidiaries to support more than half the population. Out of the balance of the rural labour about 25% should be maintained by industries and commerce, about 10 to 15% by social public utility services. All these should be radically organised and planned.¹

Agricultural Labour and the Govt.

The appalling living and working conditions of the agricultural labourers drew the attention of the Planning Commission, who realised that the existence of large number of agricultural workers—who

¹ K. T. Shah, *Principles of Planning*, p. 77,

lack sustained employment and frequently suffer from social handicaps is to be regarded as a source of serious weakness and even of instability in the present agrarian system. "The First Five Year Plan, suggested that, "Agricultural labour populations are concentrated most in areas where population presses heavily on the land and the development in sectors of the economy other than the agricultural has been retarded. By selecting such areas for special programmes—such as C. D. P.—it should be possible to make a distinct contribution to the problem of rehabilitating agricultural labourers, for increase in the tempo of development is the effective answer to the problem of unemployment and under-employment. The Plan made the following suggestions for improving the economic conditions of the agricultural labourers :

- (i) Fixation of minimum wages in low-wage pockets and intensive development areas ;
- (ii) Conferment of occupancy rights on the landless workers in regard to house sites ;
- (iii) Organisation of labour co-operatives ; and
- (iv) Resettlement schemes for landless labourers—for which a provision of Rs. 1.5 crores was made.

In the Second Plan too, greater emphasis has been laid on the need for special attention to the agricultural labourer class for two objectives : (i) fuller employment and (ii) a larger measure of social justice. The panel of economists of the Planning Commission have pointed out that, "Large sections of working force in rural areas obtain their wages or incomes much below the national average ; and social justice demands that this class is given the first chance to improve its conditions when new jobs are being created in the country." Accordingly the Second Plan provides together with the State plans, Rs. 5 crores for the settlement of about 20,000 families of landless workers an 100,000 acres of land.

Fixation of Minimum Wages

Rates of minimum wages for agricultural workers have been fixed in 17 out of the 9 states, to which the Minimum Wages Act has been applied. These States are Ajmer, Bilaspur, Coorg, Delhi, H. P., Kutch, PEPSU, Punjab, Rajasthan, Tripura, Assam, Bihar, Bombay, Mysore, U. P., V. P. and West Bengal. The table on page 78 shows the minimum wage rates for important occupations in agriculture¹.

Suggestions for Improvement

The following are a few suggestions for the improvement of the rural labour which may prevent the increase of landless class and lead to stabilisation of agricultural labour conditions :—

¹ *Report on the Working of the Minimum Wages Act, 1948 for the period from March 1948 to 31st Dec., 1953 (1955).*

APPENDIX

State	Ploughing	Sowing	Trans-planting	Weeding	Wages Rates for Children
Ajmer	1 0 0	1 0 0	0 12 0	0 12 0	...
Bihar	1 Sr. 12 ch. of rice or wheat and $\frac{1}{2}$ Sr. <i>Satoo</i>	1 Sr.	2 Srs. 3 ch. to 2 Srs. 6 ch. of rice or wheat + 10 ch. <i>Satoo</i>	Same as for ploughing and sowing	...
Bilaspur	1 8 0	1 8 0	1 8 0	1 8 0	0 10 0
Bombay	1 0 0	1 0 0	0 12 0	0 12 0	0 8 0
Coorg	1 5 0	1 5 0	1 5 0	1 5 0	0 10 6
Delhi	2 0 0	2 0 0	1 8 0	1 8 0	...
Punjab	1 8 0	1 8 0	1 0 0	1 0 0	...
	to	to		to	
Kutch	2 8 0	2 8 0		1 8 0	
Rajasthan	...	0 12 0	0 12 0	0 12 0	0 5 0
Tripura	1 4 0	1 4 0	1 4 0	1 4 0	0 10 0
U. P.	2 0 0	2 0 0	2 0 0	2 0 0	0 0 0
West Bengal	1 0 0	1 0 0	1 0 0	1 0 0	0 10 0
	...	1 8 0	to 2 4 0	per day in	0 14 0
			different localities		to
					1 4 0

(i) Regulation of Hours of Work

The question of fixing hours of work for the agricultural labourer in India has often been raised, but no serious attempts have been made to give it a practical shape. In Europe, where arable farming is associated with stock-raising and there is distribution of employment over the whole year for a permanent staff, it has been practicable to limit hours of employment. In such countries as England and Germany, which have developed industrialised farming, hours of work may be fixed with ease on account of somewhat permanent nature of employment. But so uniform a distribution of employment is unknown in Indian farming where hours of labour are unequally divided among different seasons, and where both in the sowing and the harvesting seasons the labourers must work long hours on account of the nature of their work and special difficulties of Indian agriculture.

It cannot be denied that in India casual labourers have to work for very long hours and under very trying conditions because they are neither protected by legislation nor by organised bodies such as the English Labourers' Union or the Polish and Swedish Collective Agreements Societies, which have met with striking success in securing better terms for their members. But the statutory hours regulation of labour would seem to depend purely on the question whether a capitalised system of agriculture has given rise to a class of land workers who have succeeded in attaining some degree of organisation

among themselves. Several countries like Italy, Spain, Germany, Czechoslovakia have already passed regulations concerning the hours of work in agriculture on the basis of National Legislation; and considering the gravity of the agrarian situation in India where labour is disorganised and weak, the exodus from the country to the town is creating much mischief and unrest in urban areas, and agricultural unemployment is constantly increasing. A national policy in this direction is not only opportune but imperative.

Therefore, an effective scheme of National Labour Legislation for the regulation of hours of work on the field should be based on the peculiar conditions of agriculture and the circumstances of the country. Following suggestions may be made in this connection :—

1. Prof. Ranga has remarked that the hours of work may be allowed to vary from time to time and from place to place, but care should be taken that the maximum number of hours does not exceed 12 hours for the males, and 10 hours for females on any one day and 56 hours in any week, and special scales of pay are prescribed for overtime payment over and above 8 hours. In this connection the practice of fixing the total number of hours per annum may also be considered as provided in the Collective Agreements; in Sweden, 10 hours a day and the maximum total of 2,700 hours per annum; in Germany a maximum of 2,900 hours per annum; and in Czechoslovakia 2,618 hours to not exceeding 3,000 hours per annum.¹ In India, however, it is difficult to fix the number of hours by week or by month on account of the temporary nature of employment. For different parts of India a daily maximum of 10 hours, not counting the interval for meals, and an yearly total of 3,622 hours may with advantage be laid down. The Agrarian Reform Committee suggests that the day should not exceed in any case 12 hours for males and 10 hours for females and that extra payment be made if the work exceeds 8 hours.

2. This fixation of working hours should apply to all agricultural businesses which employ hired help, and to all classes of wage-earning labourers, casual or permanent, whether doing piece work or employed by day.

3. Work should not be done at a stretch. There should be a gap of at least 1 hour between the morning and afternoon working hours during the winter and the rainy season, but this gap should be of at least four hours during the summer.

4. It is also necessary to fix the minimum duration of work during the winter and the maximum duration during the summer, e.g., in Australia the Farm and Forest Workers' Association lays down that agricultural workers shall work 8 hours a day during the three winter months and ten hours a day during the rest of the year, while

¹ International Labour Conference, Third Session, 1921, *Report II*, p. 29-44.

during the three harvest months the hours per day are increased to 11 with extra pay for the additional hour. Similarly, in Poland Collective Agreements have fixed the hours of work in agriculture as follows : A daily maximum of $11\frac{1}{2}$ hours for the months of June and July, a daily minimum of $6\frac{1}{2}$ hours for the months of December and January, an annual average of nine hours and 20 minutes per day. In India the seasonal adjustment of hours of work may also be made in the following way, Duration of hours during summer 10; 11 during the monsoon and 9 during the winter months.

5. Overtime work should not be allowed to finish the task; but for a greater work a fresh contingent should be employed.

6. Night work should in no cases be allowed in the case of women and child labour. Even in the cases of adult male labourers, they should be allowed to work in night on these conditions ; (1) That during the summer by reason of the heat, when the day work is much more trying than night work, the worker should be given the choice of work at night, to complete the day's unfinished work, provided the ten-hour limit is not exceeded. (a) That adequate protection is given against possibilities of overtime work, and ample facilities provided for work in dark and rainy nights.

7. Measures to control the application of agricultural labour protection should proceed by legislative enactment. All employers should be required to maintain a Workers' Register, showing the terms of employment and conditions and nature of work. The violation of labour employment laws should be severely punished, either by heavy fines or withdrawal of permission to employ hired help.

Improvement in the Conditions of Work

Sweating with its triple evil of long hours of work, insanitary conditions and low wages is common in agriculture. It is a common sight to see the agricultural workers working in dirty mud and water during the rainy season, or in the scorching heat of the summer, digging the ground and thatching houses or working on the fields in the early hours of winter when they are exposed to very strong, cold, biting winds. Children and women working under similar unhealthy conditions considerably suffer from a host of diseases like itches, ring-worm, and other skin diseases. During summer sun-stroke is very common and during the cold winter the exposure of the children is a sure herald of quick death. It is, therefore, necessary that not only the working conditions are made healthy but adequate protection should be given by way of insurance against illness, accident and unemployment.

In India night work during the summer, specially on moonlit nights, is recommended to avoid the trying weather of the day, provided a compensatory rest period during the day is effectively secured. In order to improve the working conditions of the

labourers it is necessary to give consideration to the following measures :—

(1) Only male adult workers should work during the rainy season when liability to disease is high and conditions of work difficult.

(2) Women and children should be prohibited from heavy work done under unhealthy conditions.

(3) Out-door work during the months of May and June should be prohibited.

(4) Women with four months' pregnancy or more should stop all manual labour.

(5) In the event of illness or accident due to the nature of the work, the employer should pay at least one-third of the wages during the period of disability.

(6) A periodical physical fitness examination should be held by a qualified doctor employed by the Rural Development Department or the Rural Labour Commissioner, and the weaklings and physically unfit should be withheld from the employment in hard labour.

(7) The nature and amount of work and the conditions under which it is performed, should be under the special care of the Labour Officer.

Protection of Women Labourers

The wretched working conditions under which the women labourers have to work in the fields call for immediate legislation to safeguard their interests. The legislative measures should apply only to regular wage-earners in agriculture, and no difference should be made between agricultural undertakings employing female labour in groups. The International Labour Conference recommends that, "Measures should be taken to ensure to women earners employed in agricultural undertakings protection before and after child-birth similar to that provided by the International Draft Convention adopted by the International Labour Conference at Washington for women employed in Industry and Commerce, and that such measures should include the right to a period of absence from work before and after child-birth, and to a grant of benefit during the said periods, provided either out of public funds or by means of a system of insurance."¹ Some countries like Finland, Great Britain, and Switzerland have already got general insurance schemes which include Maternity Insurance. A series

of laws has established measures for the protection of women workers in agriculture in Soviet Russia and granted them special privileged conditions. This has greatly improved their cultural level and living conditions. During pregnancy and child-birth, women are allowed time off with full pay for a period of 8 weeks before and 8 weeks after the child-birth. The U. S. S. R. spends huge amounts on Socialized Restaurants, Children's Nurseries, Sanatoria, Kindergartens and Hygiene Institutes, which relieve women of a large part of their domestic burdens.¹

In India, owing to the breaking up of the rigidity of customs and traditions, the employment of women labourers in all forms of agricultural occupations, and the employment almost entirely of married women, the need for the prohibition of the employment of women before and after confinement appears to be imperative. In India the protective measures adopted should be extended to those women workers who are employed on a farm permanently: women workers who are not members of the farmers' family; women workers employed individually or in groups, casual unspecified labourers, dairy maids, and domestic servants. Besides:

1. In view of the poverty of the masses work should be stopped two months before and at least one month after child-birth.

2. An allowance of half an hour twice a day should be made, in addition to meal time, for the purpose of nursing the baby, for the second and third month after the child-birth.

3. Child Welfare and Maternity Centres should be increased, and Health Visitors to work in conjunction with the rural Labour Inspector should be provided.

4. Necessary State Aid should be provided to the independent workers' funds during maternity period as well as free attendance by a qualified doctor or certified midwife.

Protection of Child Workers in Agriculture

In India the direct legislation regarding agricultural employment of children is very difficult because though in factories the labour legislation is made possible by the organisation and extension of a Factory Inspection Department, the conditions in agriculture are so diverse that inspection over the vast areas becomes very costly and inefficient. It is, therefore, necessary that here reliance should be placed on the indirect application of other laws as have been introduced in the U. S. A., and other European countries, such as compulsory school attendance laws in the U. S. A., in 27 out of 48 states, employment of children during the school hours, in any gainful occupation is definitely forbidden. This applies to

* Kraval, *Op. Cit.*, p. 120-23.

children under 16 years for 8 months in the year unless they have completed the eighth grade of the elementary school. In Canada the "Adolescent School Attendance Act" fixes the minimum age of employment in agriculture between 14 and 16 years. The Czechoslovakia Act of 1919 prohibits the general employment of children under 12 years of age. In Denmark school attendance is compulsory up to the age of 14. In Great Britain the boys below the age of 10 are prohibited to work in agriculture.

But it is unfortunate to see that in India, however, no such measures have yet been taken. The compulsory attendance and age limit for schooling has failed miserably. It is high time that action should be taken now to protect the child labour in agriculture from their ruthless exploitation. The necessary provision should be sought along the following lines :—

1. Educational Laws should be so framed that they may demand a certain period of attendance on the part of the children, failing which penalties should be imposed on those responsible for the breach of these laws.

2. Child employment during the school hours should be totally prohibited. It would be very good if the rural schools are closed down during the sowing and harvesting period, when there is experienced a shortage of labour in the fields. Besides this it would be really beneficial if an effective method of ensuring the working of Educational Laws are fixed to a minimum period, of say 8 months in the year, below which the school instruction should not be reduced.

3. Child labour should be prohibited from employment in dangerous tasks involving the operation of complex machinery, requiring hard manual labour, and other injurious and hard tasks.

4. The child labour should be given a day's holiday during a week.

It must be noted that however elaborate, indirect legislation can hardly be effective without positive legislative measures. Provisions have, therefore, to be made to handle a care-free population such as we find in this country. Therefore, the first step in this direction would be to strengthen the Educational Laws in regard to Compulsory Education in rural areas.

Organisation of Vocational & Technical Education

Another measure urgently required to ameliorate the condition of agricultural workers would be the organisation of vocational and technical education. Vocational agricultural education is necessary not only in the interest of the agricultural worker but in that of the entire nation, because such education will have a special

importance in securing better conditions of livelihood to agricultural workers of all classes, preventing unemployment, increasing production, checking the rural exodus, and helping the landless proletariat to become an independent cultivator. Some measures towards ruralizing schools, imparting basic education and introducing special technical courses for agricultural workers have been initiated by various State Governments in India. At present there is the need of general mass education and technical agricultural education—the former to produce better citizens, and the latter to improve the earning capacity of rural workers. It is particularly desirable that all elementary instruction in rural districts should be directed to the formation of an agrarian consciousness in the children who would then, when they grow up, infallibly seek that technical agricultural instruction to which at present the masses of the rural population do not attach sufficient importance even where the greatest facilities are offered for them. This can be done by opening Agricultural Apprenticeship Centres, Rural Constitution Schools, Night Clubs and Summer Camps for rural children. Great importance should also be attached to the organization of schools of Domestic Science and Household Management for village girls.

Development in the Amenities of Rural Life

There is also the need for developing the amenities of rural life. We should not only introduce agencies for the promotion of organized recreation, but try to bring order and beauty into rural life. The countryside must be made beautiful and attractive both by the preservation of natural beauty and the development of rural architecture. The disparity between the town and the country can be reduced by providing the rural masses with facilities for aesthetic development. In India, the dire economic struggle through which practically all rural people have to pass, has developed a philosophy of life which considers remunerative work alone as righteous. This 'work-attitude' has considerably slowed up the introduction of organized recreation into rural life, and has caused rural exodus and rural degeneration. The monotony and distraction of rural life can be broken by a systematic promotion of social welfare and economic prosperity of the agricultural population by the organization of village *Akharas* (physical culture institutes), Community Field Days and Festivals, Dramatic Societies (*Natak Mandlis*), and village *Bagichis* (Clubs), and also by holding inter-village competitions in wrestling, music and sports. This should be supplemented by occasional talks from eminent villagers and towns-folk on matters concerning rural life and labour. There should also be well-equipped rural libraries and night schools run by philanthropic individuals or private institutions should receive Government aid and encouragement. These facilities will enable the country-folk to participate in the amenities of urban life. This will require not only the planning of practical programmes but also the co-ordinations of agencies of propaganda and social control, such

as the Panchayats, Village Social Welfare Leagues, Kisan Sabhas, Praja Mandals, the Radio and the Rural Stage.

Establishment of Social Clinics

Finally, there is the all-important need for establishing Social Clinics and launching a programme of National Self-Direction. Social Control, whether in the form of taboo, custom or law, or by an enlightened public opinion, is necessary to regulate the conduct of members in society. But in order to make control effective the symptoms of each social evil have to be studied by experts. Each nation, therefore, should make it a point to establish Social Clinics to facilitate experiment and research in social problems and employ the services of technicians in the solution of these problems, otherwise it will be difficult to follow successfully the programme of National Self-Direction. Population control is the first and most pressing of all social questions in India. The growing disparity between food and mouths, and the consequent lowering down of the general standard of living, most urgently demand social reform.

Thus it may be said that the position of the agriculturists in India could never be ameliorated by pseudo-economic measures which could end only the vicious circle, but could be improved only by teaching them how to limit the size of their families. Owing to lack of knowledge of birth control, or self-control, or due to ill-occupied leisure, many classes of agricultural workers, specially those on the lowest rung of the social ladder, are breeding like rabbits and rats, ultimately increasing the nation's social liabilities. There is, therefore, not only the need for an effective control of marriages but also of the inculcation of eugenic ideas into the people in order to maintain a relative proportion between the well-born and ill-born.¹ In population India does not require numbers so much as quality. In order to improve the physical and intellectual standards of the country, Eugenics should become an orthodox religious tenet of our future life. But allied to the question of population control are the problems of child welfare and nutrition. Rural children are neglected not only in the pre-school period but perhaps even more seriously during the school period. The dire poverty of the masses compels them to subsist on an ill-balanced and inadequate diet which undermines, in the critical period of growth, the health and efficiency of the growing generation. The problem of rational dietetics and nutrition should at once draw the attention of our economists and sociologists so that some reliable data may be available for constructing our future programme. The establishment of Social Clinics will not only provide better opportunities for aspiring members to cultivate their habits and discipline

¹ Gandhi, M. K., *Self-Restraint versus Self-Indulgence*, the British Committee on the Ethics of Birth Control, and Kuczynski, *Balance of Births and Deaths* Vol. I, pp. 40-43.

their conduct under proper auspices and healthy social environment, but will guide the guardians of the Social Mind and facilitate the progress of National Self-Direction.

Provision of Social Security Benefits

In the interest of improvement of the social and economic conditions of agricultural workers, it is urgently necessary that they should enjoy the benefit of Social Insurance. Agricultural workers should be placed on the same footing as industrial workers and should receive adequate protection against sickness and invalidity, and have provision for old age.

It is no exaggeration to say that the five giants referred to by Sir William Beveridge, *viz.*, Want, Disease, Ignorance, Squalor and Idleness, hold under their grip the lives of large masses of rural people. A simultaneous attack on these five giants should be launched, for all are interconnected and act in a vicious circle. The three-fold approach : (i) Constructive Community Services, (ii) Subsidized Consumption Services and (iii) Social Security Measures, I believe, postulates such an attack. Constructive Community Services such as free compulsory education up to a certain standard, public health and medical services and Subsidized Consumption Services such as housing, free supply of milk, etc., together aim at destroying the last four giants. Social Security seeks to attack the first one. Constructive Community Services are 'national' in scope in so far as they aim at the improvement of the 'mental' and 'environmental hygiene' of all residents in villages. As such foremost priority should be given to the 'national' services.

Notwithstanding the first two types of protection, need makes itself felt during periods of disability, caused by sickness, accident, old age and unemployment. Inability to earn wages during these periods drives them into debt or destruction which cannot prevent without collective assistance. Two kinds of assistance are necessary, *viz.*, (a) medical assistance and (b) compensation for wage loss. The double-deck system of insurance and assistance comprehensively called 'Social Security' seeks to provide these two kinds of assistance. Insurance is regarded as generally inapplicable to agricultural labourers owing to their heterogeneous composition and formidable difficulties in fixing and collecting contributions. Referring to conditions in India Prof. Adarkar opines, "In all probability social assistance will have to be the main method of approach in the case of agricultural masses."¹ The report of the Bhoré Committee also supports this conclusion with particular reference to medical services in rural areas.²

¹ Adarkar, *Planning of Social Security in India*, p. 10.

² *Report of the Health Development and Survey Committee*, p. 5.

Sickness in rural areas is at present heavy but of a preventible kind. Hence, it is suggested that Health Insurance should be adopted in India and with the improvement of environmental health services the high incidence is bound to fall down. Under improved conditions, their open-air occupations coupled with reasonable hours of work would minimize the cost of assistance and where sickness cases occur, it should be cured and cash benefit or more preferably, in kind such as provision of necessities to the beneficiary and the members of his family should be assured.

Rural medical assistance should give the first preference to maintaining the health of mothers and children below 10 years. Assistance should be in the form of skilled medical aid and maintenance of benefit. Confinement and delivery in properly equipped institutions would secure the former. The Bhore Committee recommends a dispensary with two beds for maternity cases, one woman doctor, four public health nurses, four mid-wives and four trained dais in a primary unit serving a population of about 10,000 to 20,000.¹ This is a reasonable proportion to start with and should be implemented. They have also recommended the gradual extension of compulsory abstention from work for a period of six weeks before confinement to all women gainfully employed outside their homes, as over-work affects a woman's health both during pregnancy and in the post-natal period.² Maintenance benefit too is of vital importance as the pregnant women, nursing mothers and growing children require a more generous and nourishing diet than the general population and hence the services for these two sections of population, however elaborate and efficient, will fail to produce satisfactory results unless simultaneous measures are taken to improve their nutrition.³ For women and children of low income groups this can be secured through subsidized consumption services such as supply of milk and other valuable additions to diet either free of cost or at nominal prices. Compensation for wage loss for working class women should be provided preferably by supply of necessities through multipurpose societies in the villages, the cost being borne by the Assistance Authorities.

Unemployment among the rural labour should be, as far as possible, checked by starting rural subsidiary occupations. The Royal Commission on Agriculture, the Famine Commission and the Planning Commission have recognised *inter alia* the development of Cottage and Agro-industries with the aid of cheap electric power.⁴

¹ *Report, Op. Cit.*, pp. 7, 27.

² *Report, Op. Cit.*, p. 28.

³ *Ibid.*, p. 28.

⁴ *Report of Royal Commission on Agriculture*, p. 566 and *Report of Famine Enquiry Commission* (1915), p. 312; *Second Five Year Plan*, p. 318.

Social assistance promises to secure the much-needed protection for agricultural labourer. Nominal contributions from even the low-income groups, should be raised through multi-purpose societies, in which membership should be made compulsory. The State should follow the principle of payment 'according to capacity' and 'benefit according to need.' Further voluntary organisations should act as 'watch-dogs' on state social services, so as to prevent their incursions into individual enterprise and infringement of individual liberty. In this connection, the organisation of Rural Community Councils, corresponding to the Urban Community Councils of England may be considered. Their task will be to secure co-operation as fully as possible, to review steadily the social needs and social provision of the area and to enhance the welfare of the inhabitants. Their business is not so much to carry on social services themselves as to see that they are carried on.

Conclusion

In short, our planning for rural labour should, "involve measures for conserving our soil resources for diversion of land to sound uses, for the shifting of population from one part of the country to the other, for adequate training and education of the masses, for the organisation of some form of collectivism and socialised democracy, which will make bread and shelter as freely accessible to every one as water and use of roads now in civilised countries."¹

The above proposals would require an army of workers for fruition. Ambitious plans can only mature if there are proper persons to carry them out. A Board or a Committee shall have to be set up to formulate schemes and put them into practice. A beginning shall have to be made sooner or later. Difficulties would arise in initial stages and doubters would shake heads but if plans are pushed on with an iron will and determination they would undoubtedly succeed. The barrier of conservatism would be broken and a new and bright chapter would open in the hitherto luckless history of rural labour. The working class now backward and behind would shake off its misery. With robust national policies and men to work them, let our rural labourer have better schools for his children better shops and hospitals, better transport facilities and supplies of running water, gas and electricity in his home.

¹ Wadia and Merchant, *Our Economic Problems*.

APPENDIX—2

Summary of the Report of Foodgrains Enquiry Committee

The Report of the Foodgrains Enquiry Committee whose appointment was referred to in chapter on 'Agricultural Policy and Govt.' was published on November 19, 1957. The Committee has reviewed briefly the food situation during the last few years and the policy of the Government regarding distribution, production and prices of foodgrains. Further, an assessment of recent developments and a prognosis of the food situation, as it is likely to develop during the next few years, has been made and is followed by the main conclusions and recommendations which are summarized below. The Report has also dealt briefly with the problem of scarcity areas.

Review of Food Policy in Recent Years. The Committee has reviewed the food situation and policy of the Government regarding distribution, production and prices of foodgrains since 1950-51. It observes that just before the First Five Year Plan was launched, *i.e.*, in 1950-51, the country was in the grip of a serious food shortage and food prices were ruling at high levels. Large releases from Government stocks, better crop prospects, and a tighter monetary policy helped to bring down the prices substantially during the following two years and there was a general feeling that stability had been largely restored. This stability, however, was short-lived as there was unprecedented increase in foodgrains production during 1953-54. The year saw the beginning of a recession which gathered increasing momentum in the following year. One reason for the magnification of price movements was that the marketed surplus tended to increase more than proportionately as production rose. To arrest the decline in prices, Government took a series of measures including limited price support operations and permission to export pulses and rice in limited quantities. There was a general feeling that the bottom level was perhaps reached and prices could not fall further. A reversal of this trend ensued due to the reports in October 1955 of a shortfall in millets crop. This rise in prices was helped to a certain extent by the knowledge that the Government had no stock of millets and that its stock of wheat was low. The rise in prices, which at first looked like a normal correction of the earlier fall, gathered momentum throughout 1956. An apparent paradox of the situation, however, was that in spite of the substantial increase in foodgrains production during 1956-57, prices continued to rise, indicating the strength of the demand factors. The rise in prices in the case of different commodities, however, differed widely, the rise being greater in the case of those which had suffered heavily in output. The Committee observes that the relative instability of food prices with its consequences in terms of instability in incomes of agricultural producers and costs of living, costs of production, employment and other elements of the economy forms one of the problems for consideration.

The Government's food policy has been reviewed broadly in relation to programmes of food distribution and food production. Between 1951-57, the policy regarding food distribution has undergone a change successively from complete control to complete decontrol and back to partial control. Tracing the history of the Grow More Food Campaign followed by the Integrated Production Programme, the Committee observes that the ideal of relative food self-sufficiency was itself not capable of easy achievement because in practice it turned out to be a 'moving target' in a country where the masses of the population were underfed and even a small increase in production and in income led to a substantial increase in consumption. The recommendations of the Grow More Food Enquiry Committee, appointed by the Government of India in 1952 were incorporated into the programme of agricultural development drawn up under the First Five Year Plan, and a target of 7.6 million tons of additional foodgrains was fixed to be achieved by the end of 1955-56. In the early years of the Plan, the policy of concentrating efforts on intensive cultivation in selected areas with assured water supply and suitable soil was continued but subsequently as the food position appeared to have improved, there was a shift of emphasis to community development projects. After the relaxation of controls in 1954 and the abandonment of procurement, however, the emphasis in community development projects shifted from increasing agricultural production and marketable surplus in selected areas to increasing the general level of production and well-being of the country as a whole. The production of foodgrains at the end of the First Five Year Plan exceeded the target fixed for the Plan period. Under the Second Five Year Plan a target of 10 million tons of additional production of foodgrains over the year 1955-56 was fixed by the Planning Commission as compared to 7.6 million tons in the First Plan. This target, however, was revised upwards to 15.5 million tons mainly with a view to meeting the domestic demand, increasing export earnings and providing adequate safeguards against the possibility of inflation arising out of the implementation of the Second Plan.

Analysis of Factors in Rise in Prices. The Committee states that on the whole the rise in prices may be ascribed to a general increase in demand resulting from the increase in investment expenditure on public and private accounts financed by deficit financing and credit expansion during the last few years. These general inflationary forces tended to manifest themselves through various factors on the demand side of foodgrains. With a steady increase in the purchasing power of the public, there has been a change both in the volume and pattern of food consumption of many sections of the people. For instance, people who used to live on roots like tapioca and sweet potatoes are transferring their demand to millets, or coarse rice and those who used to take millets formerly are now shifting over to rice and wheat. Another factor which affected the demand side was the change in the propensity to stock. It is pointed out by the Committee that as a result of the sharp fall in prices, stocks with the traders had fallen to very low levels by the middle of 1955 but with an expectation of a rise in prices in 1956,

they increased considerably. In 1955-56 most of the stock piling was done by the traders but in 1956-57, there was a significant change and a large part of the stock holding was done by big and medium producers also.

Reviewing the supply position of foodgrains, the Committee states that the fall in the production of millets to the extent of 3 million tons in 1955-56 initiated the price uptrend in 1955, and increased the pressure of demand on both rice and wheat. In spite of an increase in the production of millets, the pressure on rice and wheat continued in 1956-57 also. The Committee further points out that from the point of view of prices, variations in marketed surplus are more important than variations in production and states that though the gross availability per capita in 1957 may be almost the same as in 1954, it is likely that the net availability per adult for non-farm population will have declined due to increased retention by the agriculturists. Thus the rise in prices, since the middle of 1955, according to the Committee, is essentially an outcome of monetary and other general factors interacting on certain special factors pertaining to demand and supply of foodgrains. With a situation generally favourable to a rise in prices of foodgrains, it was first the shortfall in production and later the slowing down in market arrivals which pushed the prices of foodgrains sharply upwards from the low levels reached in 1954-55.

Prospects for the Future. Discussing prospects for the future, the Committee points out that it is extremely hazardous to attempt a forecast of economic trends over a relatively long period with dynamic economic forces at work in the country and on the international economic plane. The problem of estimation of the future demand of foodgrains, according to the Committee, is, therefore, rather difficult owing to the difficulty of evaluating the relative importance and interactions of various factors involved such as, growth in population, changes in the income resulting from the development outlay on programmes under the Second Plan, and resulting changes in the propensity to consume and the propensity to stock. After taking into account, the possible increase in the population in rural as well as urban areas separately, the Committee feels that the demand for foodgrains on this account may increase by 10 per cent during the Second Plan period. Additional demand for foodgrains due to increase of income has been estimated between 4 and 4.5 per cent. The Committee, therefore, expects a total increase between 14.4 and 15 per cent in the total consumer demand for foodgrains including that for cattle feed and seed during Second Plan period. In the absence of the necessary estimates of total demand in the base period, the Committee has used the average gross availability of foodgrains during the last 3 years at 69 million tons as the basis for working out the future demand for foodgrains in quantitative terms and has roughly estimated the total demand for 1960-61 at 79 million tons. The breakdown of these 79 million tons between rural and urban areas worked out roughly to 66 million tons and 13 million tons respectively and between superior grains, namely, rice, wheat and pulses, and inferior grains, namely, millets at 56 million tons and 23 million tons, respectively.

The Committee has considered the prospects of supply of foodgrains over the next few years from two aspects, *i.e.*, overall supply and the supply in the market. After ascertaining the views of the Government as well as other interested organizations, the Committee has concluded that the actual achievement in foodgrains production by 1961 is likely to be of the order of 77.5 million tons which is comparable to the figure of 79 million tons for likely demand in 1960-61. Considering the availability of foodgrains from abroad, the Committee feels that the total imports of wheat on present estimate would amount to 2 lakh tons under International Wheat Agreement, 4.5 lakh tons under P. L. 480 and 3.5 lakh tons from commercial sources, a total of ten lakh tons. Regarding rice, apart from the small quantities which could be obtained from U. S. A., Egypt, Thailand, China and Viet Nam, it is expected that imports from Burma would be 5 lakh tons in 1958 and 3.5 lakh tons in each of the subsequent two years.

Price Stabilization. As the instability of food prices was expected to continue during the next few years, the Committee feels that special measures are necessary for keeping price disparities within reasonable bounds. As complete free trade was undesirable and full control had its administrative and financial difficulties, the Committee has recommended a *via media* between these two as the solution of the food problem. Full control, according to the Committee, should be resorted to only in cases of emergency like war or famine or extreme inflationary pressures. Controls should be of countervailing or regulatory rather than of restrictive type. For the present, it should ordinarily be sufficient to undertake open market purchase and sale of foodgrains by the Government as a regular measure, socialise part of the wholesale trade, exercise control over traders operating in the rest of the market through a system of licensing, maintain a sizeable reserve stock of wheat and rice, arrange for the regular import of a certain quantity of wheat and rice and organize propaganda for consumption and production of subsidiary food. Special measures, however, have to be undertaken in a period of rising or falling prices.

The Committee recognises the importance of appropriate, fiscal, monetary and credit policies in controlling prices, but emphasises that these have to be supplemented by certain specific action directed to controlling foodgrains and also in respect of related commodities if comparative stabilisation of their prices is desired. It feels that to ensure a level of prices which would provide the necessary incentive to the producer with due regard to the interest of the consumer and maintenance of reasonable cost structure in the country, it is essential to set up such an organization and machinery for co-ordinated formulation of measures to be taken from time to time and their implementation.

Foodgrains Stabilization Organization. The Committee has, therefore, recommended firstly, the setting up of a high powered authority known as the Price Stabilization Board for the formulation of policy for price stabilisation in general and for determining from time to time the programme of enforcing it and secondly, the establishment of

a suitable organisation known as Foodgrains Stabilisation Organisation to execute that part of the policy and programme framed by the Price Stabilization Board as may relate specifically to purchase and sale operations in the field of foodgrains. The Committee states that it is desirable to set up a body of non-officials called the Central Food Advisory Council to assist the Food Ministry and Price Stabilization Board. Similarly an organization called Price Intelligence Division for collecting all relevant data should be built up with a senior officer as head who will also act as Secretary to the Price Stabilization Board. The Price Stabilization Board with the help of the Central Food Advisory Council and Intelligence Division will keep a careful watch over the price situation and recommend necessary action from time to time for maintaining not only the general price level reasonably stable but also for preventing undue disparity between the prices of various commodities.

The Foodgrains Stabilization Organization which may either be a department of the Ministry of Food and Agriculture or a statutory corporation or a limited company, will operate as trader in the foodgrains market with branches or agencies of its own in all important mandis particularly in surplus areas and centres of distributive trade. The most important work of this Organization will be buffer stock operations, *i.e.*, purchasing when the prices tend to fall and selling when prices rise. It will, from time to time, have to fix limits of prices at which it would buy or sell within the range of prices for its operation fixed by Government on the advice of the proposed Price Stabilization Board. The Committee emphasises the need for socialization of trade to bring about stability of agricultural prices. It is not necessary that the Foodgrains Stabilization Organization should undertake all these operations itself. It may operate through the agency of licensed wholesale dealers, rice and flour mills or co-operative societies and may make use of the Departments of Civil Supplies and Marketing of the State Governments. This Organization should generally try to complete its purchasing operation within three months of harvest and should have warehouses in important producing and consuming centres including deficit areas. The Foodgrains Stabilization Organization is expected to control a large part of the market surplus during normal years, but so long as inflationary trends continue and food shortages persist, open market operations may push up the prices making it necessary to stop its operations. It will, therefore, be necessary to undertake some form of compulsory procurement for replenishing reserve stocks and maintaining supplies to vulnerable sections of the population at reasonable prices. In order to make the measure a success, licensing of foodgrains dealers will be necessary and an order on the lines of the Foodgrains (Procurement and Licensing) Order 1952 should be issued and strictly enforced. The building up and maintenance of an adequate reserve stock as distinguished from any buffer stock is one of the most important tasks of the Foodgrains Stabilization Organization. The Committee is aware of the Government's decision to build up a reserve stock of two million tons but it emphasises the need for replenishing these stocks as soon as they tend to fall below that figure. In this context, the Committee feels that an annual import of 2 to 3 million tons will be required

for some time to come. The Committee is of the opinion that the assured supply of foodgrains from U. S. A. and Burma would enable the formulation of a stable and long-term food policy.

Short-period Measures. Referring to the short-term measures relating to control of distribution and trading in foodgrains, the Committee states that food distribution should be primarily through fair price shops or through institutions like co-operative societies or employers' organizations, etc. In view of relatively easy supply position, wheat may be issued freely upto a full quota of 12 oz. per adult, per day. The issue of rice, however, which is in short supply may ordinarily be not more than 8 oz. per adult per day in South India, 6 oz. in East India and 4 oz. in other areas. Moreover, this amount should be issued only if the purchaser agrees to take the balance of 12 oz. in the shape of wheat. The sales from these shops, should normally be on 'no profit, no loss' basis. A provision should be made for subsidised sales to specific categories of persons. Big cities may be cordoned off in case of abnormal fall in production and non-availability of larger imports to insulate the rest of the economy from pressure that these cities with high purchasing power might exert on general supply. The object of creating zones is to match deficit areas to surplus areas and thus to minimize the demand on Government supplies and also eliminate cross movements of foodgrains. The Committee feels that once a zone is formed it should be mainly on a relatively long-term basis so that the trade patterns are not frequently disturbed. Regarding local relief, the Committee recommends that a section should be set up within the State Government and also at the Centre for the purpose of anticipating difficulties arising out of possible floods and drought, locating scarcity pockets and initiating prompt means to deal with them. The Committee suggests that Village Panchayats and co-operatives should be encouraged through advances wherever necessary to set up grain golas. The Committee has also recommended that Food Administration at the Centre and in the States should be put on a permanent footing.

The Committee has examined in detail the different schemes for stepping up the foodgrains produce such as major and minor irrigation works, distribution of improved seeds and chemical fertilisers, land reclamation, etc., and has made a number of recommendations, e.g., reallocation of unspent funds allocated for major irrigation works to minor irrigation works, uniformity of rates in homogeneous tracts, increase in the seed multiplication farms, high priority for import of fertilizers, etc. The Committee has observed that uncertainty about land reforms is affecting production efforts and has recommended that the State Governments should proceed expeditiously with enacting the necessary legislation for land reforms and follow it up with effective implementations. It is expected that the food requirements of the urban areas may increase considerably in the course of next few years and necessary measures should be taken to augment the total marketed supply and to encourage its flow to the assembling markets.

Problems of Scarcity Areas. Referring to the problem of scarcity areas which spread over a long belt extending from the nor-

thern districts of Bombay to the eastern tip of Assam and touching parts of Rajasthan, Madhya Pradesh, Orissa, Eastern U.P., Bihar and West Bengal, the Committee points out that the purchasing power of the people in almost all these areas is generally low owing to inadequate employment opportunities and unbalanced economy. These areas, therefore, have posed difficult and recurring problems. The Committee has made a brief study of the local problems of one of these pockets *viz.* the eastern districts of Uttar Pradesh and hopes that detailed and intensive studies would be undertaken in such areas before long. The solution of the problem of low purchasing power, according to the Committee, lies in correcting the unbalanced character of the economy by increasing and diversifying employment opportunities through promotion of village and small-scale industries besides provision of better irrigation facilities for agricultuer and for protecting the economy against flood hazards.

The Committee concludes its report by emphasising the need not only for determined and all-out efforts to step up food production but but also checking the high rate of the growth of population. The Committee feels that gravity of the food situation demands national efforts transcending regional and party considerations.

BIBLIOGRAPHY

(i) Books

- | | |
|-----------------------------|--|
| <i>Abhyankar, N. G.</i> | Provincial Debt Legislation. |
| <i>Adarkar, P. . .</i> | Planning for Social Security in India. |
| <i>Agarwal, S. N.</i> | Gandhian Plan. |
| <i>Agarwal, G. D.</i> | (i) Agrarian Reforms and Agricultural Reconstruction. |
| | (ii) Reorganisation of Agricultural Credit. |
| <i>Agarwal, A. N. (Ed.)</i> | Economic Planning and Agriculture. |
| <i>Ahmed, M. B. . .</i> | Problems of Rural Uplift in India. |
| <i>Aiyar . .</i> | An Economic Survey in a Malabar Village. |
| <i>Aiyar, A. K. Y. N.</i> | Village Improvement and Agriculture Extension, 1954. |
| <i>Aiyar, V. G. R.</i> | Agricultural Economics, 1953. |
| <i>Alteker, A. S. . .</i> | History of Village Communities in India. |
| <i>Anderson, F. G. H.</i> | Facts and Fallacies about Bombay Land Revenue System. |
| <i>Anstey, V. . .</i> | Economic Development of India, 1949. |
| <i>Ayyar, V. G. . .</i> | Small-scale Production of India. |
| <i>Banerjee, P. N.</i> | Indian Economics, 1940. |
| <i>Banerji, G. . .</i> | The National Forest Policy of India (1951). |
| <i>Bhagwat M. G.</i> | The Farmer—His Wealth and Welfare. |
| <i>Bhargava, B. K.</i> | Indian Peasant Proprietorship. |
| <i>Bhattacharya, N. C.</i> | Some Bengal Villages. |
| <i>Brayne, F. L. . .</i> | (i) Better Villages. |
| <i>Ditto</i> | (ii) Socrates in an Indian Village. |
| <i>Ditto</i> | (iii) Remaking of Village India. |
| <i>Blunt, E. . .</i> | Social Service in India. |
| <i>Buchanan, D. H.</i> | Development of Capitalistic Enterprise in India, 1933. |
| <i>Burns, W. . .</i> | (i) Sons of the Soil. (ii) Technological Possibilities of Agricultural Development in India, 1944. (iii) The Progress of Agricultural Science in India during the past 25 years, 1939. |
| <i>Culvert, H. . .</i> | Wealth and Welfare in the Punjab. |
| <i>Carver, T. N. . .</i> | Principles of Rural Economics. |
| <i>Chand, Mahesh</i> | Economic Problems of Indian Agriculture. |
| <i>Chandra Shekhar, S.</i> | India's Population—Facts and Policies. |
| <i>Chatterjee, H. S.</i> | Indian Economics. |
| <i>Chatterjee, R. N.</i> | Indian Economics. |
| <i>Chaturvedi, S. C.</i> | Rural Wages in U. P., 1947. |

- Chaturvedi* Economic Survey of Kotah Village, 1945.
- Chopra, B. N.* Indian Fisheries, 1951.
- Clerk, C.* Conditions of Economic, Progress, 1955.
- Dantwala* Marketing of Cotton.
- Darling, M. L.* (i) Punjab Peasant in Prosperity and Debt 1950.
 (ii) Rusticus Loquitor. (iii) Wisdom and Waste in a Punjab Village.
- Dass, R. K.* Industrial Efficiency of India, 1930.
- Das Gupta, A.* Economic and Commercial Geography of India, 1957.
- Datta, B. N.* Dialectics of Land Economics in India, 1952.
- Datta Deoji Das* (i) Landlordism in India, 1931.
 (ii) Peasant Proprietorship in India, 1924.
- Demello, F. M.* Problems of Rural Reconstruction.
- Deodhikar, G. B.* Design for the Layout of the Indian Transport and Communication.
- Desai, H. N.* Rural Karnatak.
- Desai, M. B.* Rural Economy of Gujrat.
- Driver, P. N.* Problems of Zamindari and Land Tenure Reconstruction.
- Duckham* Animal Husbandry in British Empire.
- Dutt, R. Palm* India To-day, 1947.
- Dutt, R. C.* Economic History of India during Victorian, Age, 1950.
- Dutta, B.* Economics of Industrialisation.
- Dutta, C. P. and Pugh, B. M.* .. Farm Science and Crop Production in India, 1947.
- Dubey, R. N.* Economic Geography of Indian Republic, 1947.
- Emerson, G.* Voiceless India.
- Fisher, A. G. B.* Economic Progress and Social Security.
- Gadgil, D. R.* (i) Industrial Evolution of India in Recent Times, 1948.
 (ii) Economic Effects of Irrigation, 1948.
- Gangulee, B.* Trends of Agriculture and Population in Ganges Valley.
- Gangulee, N.* (i) Indian Peasant.
 (ii) Problems of Rural India.
- Govil, K. L.* Agricultural Marketing in India, 1956
- Government of India* Rural Manpower and Occupational Structure, 1954.
- Ghosh, B. B.* Problem of Agricultural Credit in India.
- Ghosh, D.* Pressure of Population and Economic Efficiency in India.
- Harris, D. G.* Irrigation in India.
- Hatch, D. S.* (i) Up from Poverty in Rural India

- Haque, A.* (ii) Freedom from Waste.
Herrick Man Behind the Plough.
Holderness, T. Rural Credit.
Howard, A. C. G. C. Peoples and Problems of India, 1915.
Howard, A. Development of Indian Agriculture.
 (i) Crop Production in India.
 (ii) Labour in Agriculture.
 (iii) Waste Products of Agriculture.
Hough, E. M. Co-operative Movement in India, 1953.
Hussain Agricultural Marketing in Northern India.
I. L. O. Recent Development in certain Aspects of Indian Economy, Vol. 1, 2, 3, 1956.
I. L. O. Industrial Labour in India, 1938.
Iyengar, S. K. Studies in Indian Rural Economics.
Jack, Major J. C. Economic Life of a Bengal District.
Jayraman, K. A Study of Panchayats in Madras.
Jather, G. B. and Beri, S. G. Indian Economics, 1952.
Jack, G. V. and Whyte, R. O. The Rape of the Earth, 1949.
Kaji, H. L. (i) Co-operation in Bombay.
 (ii) Co-operation in India.
Karve, D. G. Poverty and Population in India.
Khan, M. K. Co-operation and Rural Reconstruction in India.
Khan, N, A. Land, Landlord and Legislature.
Knowles, L. C. A. Economic Development of British Overseas Empire, Vol. 1.
Kolhatkar Reconstruction of Indian Agriculture.
Krishnaswami, S. V. Rural Problems in Madras, 1951.
Kulkarni Agricultural Marketing in India, 1956.
Kumarappa, J. C. (i) A Survey of Metur Taluka.
 (ii) Why the Village Movement.
 (iii) Our Food Problem.
 (iv) An Over-all Plan for Rural Development.
Leake Foundations of Agriculture in India.
Linlithgow, Lord Indian Peasant.
Lorenzo, A. H. (i) Agricultural Conditions in Northern India, 1948.
 (ii) Indian Labour in Primary Industries, 1948.
Lal, S. L. A Scheme for Economic Development of Village.
Lal, P. C. Rural Reconstruction of India.
Lucas, E. D. Economic Life of Punjab Village.
Makviya, H. D. (i) Land Reforms in India, 1955.
 (ii) Village Panchayats in India, 1956.
Mamoria, C. B. and Saxena, R. D. Co-operation in India, 1957.

- Maine, H. S.* .. Village Communities in East and West, 1871.
- Mann, H. H.* .. Land and Labour in Deccan Villages, Vol. I and II.
- Mathai, John* .. Village Government in British India, 1915.
- Mehta, P. R.* .. Economics of Agriculture of the Bombay Presidency.
- Mehta, J.* .. A Study of Rural Economy of Gujerat.
- Menon, T. K.* .. Economic Survey of Ankikaod Village, Cochin State.
- Misra, B. R.* .. Land Revenue Policy in U. P.
- Michel Kate* .. Industrialisation of the Western Pacific.
- Moomaw, I. W.* .. Education and Village Movement.
- Mukerjee, B. B.* .. (i) Agricultural Marketing in India.
(ii) Co-operation and Rural Welfare in India.
- Mukerjee, Karuna* .. Land Reforms, 1952.
- Mukerjee, R. K.* .. (i) Man and his Habitation.
(ii) Rural Economy of India.
(iii) Indian Working Class.
(iv) Planning the Countryside.
(v) Foundations of Indian Economics.
(vi) Fields and Farmers of Oudh.
(vii) Economic Problems of Modern India, Vol. I and II, 1939 and 1941.
(viii) Land Problems of India, 1930.
(ix) Food Planning for 400 Millions, 1938.
(x) India Analysed, Vol. I, II and III.
- Mukerjee, R. K.* .. Local Government in Ancient India, 1919.
- Mukerjee, N. G.* .. Hand Book of Indian Agriculture.
- Mukhtar, G. G.* .. Life and Labour in Gujrat.
- Nanawati, M. B. and Anjaree J. J.* .. Indian Rural Problems, 1951.
- Narain, Brij* .. Indian Economic Life.
- Naidu, N. S. and Narsimhan* .. Economics of Indian Agriculture, Vol. I and II, 1955.
- Nehru, S. S.* .. Caste and Credit in Rural India.
- Owens, R.* .. Economic and Commercial Conditions in India, 1953.
- Panandikar, S. G.* .. Changing Face of Bengal.
- Pandit, Y. S.* .. Economic Conditions in Maharashtra and Karnatak.
- Patel, S. J.* .. Agricultural Labourers in Modern India and Pakistan.
- Patel, A. D.* .. Indian Agricultural Economics.
- Patel, G. D.* .. The Indian Land Problem and Legislation, 1954.

- Powell, Baden* (i) Land Revenue in British India.
(ii) Village Communities in India.
- Pillay, T. S.* (iii) Land System of British India.
An Outline of Co-operative Movement in India.
- Pillai, P. P.* (i) Economic Conditions in India, 1928.
(ii) Welfare Problems in Rural India.
- Punjabi, K. L.* Bombay Land Revenue System.
- Qureshi, A. J.* Future of Co-operative Movement in India.
- Ramamurti, B.* Agricultural Labour—How they Live and Work, 1954.
- Raina, J. L.* (i) Indian Rustic.
(ii) Co-operative Movement in India.
- Ranga, N. G.* (i) Economic Organisation of Indian Village, Vol. I and II.
(ii) Revolutionary Peasants.
- Rao, R. N.* (i) Cottage Industries and their Role in National Economy.
(ii) Multi-purpose Societies.
- Ramaswamy, T. N.* Stabilization of Indian Agriculture.
- Ramanadhan, V. V.* Road Transport in India.
- Ranade, V. G. . .* Survey of a Konkan Village.
- Rao, Rama . .* Gramism.
- Ranade . .* Essays in Indian Economics.
- Ray, P. K. . .* Agricultural Economics of Bengal, Vol. I.
- Reed, M. . .* The Indian Peasant Uprooted.
- Saha, K. B. . .* Economics of Rural Bengal.
- Sarkar, N. R. . .* Problem of Agricultural Indebtedness.
- Sastri, N. S. S.* A Statistical Study of India's Industrial Development, 1947.
- Sayanna, V. V.* (i) Readings in Rural Economics.
(ii) Land Problems of Madras.
- Seth, K. C. . .* Wages and Wage Policy.
- Sen, Sachin . .* Tenure of Agricultural Land.
- Sen, Sudhir . .* (i) Land and its Problems.
(ii) Rural Reconstruction.
- Sen, Bhawani . .* Rural Bengal in Ruins.
- Singh, Baljit . .* (i) Land of Two Rivers.
(ii) Whither Agriculture in India.
(iii) Population and Food Supply in India.
- Singh, Mukhtar* (iv) Economic Planning in India, 1954.
(i) Rural Reconstruction in India.
(ii) Agricultural Reforms in Foreign Countries.
- Singh, Charan . .* (iii) Cottage and Small-scale Industries in India.
(iv) Rural India.
Abolition of Zamindari, 1947.

- Singh, Tarlok* .. Poverty and Social Change, 1945.
Sivaswami, K. G. .. Legislative Protection and Relief of Agricultural Debtors.
Shah, K. T. .. Principles of Planning.
Sharma, T. R. .. Location of Industries in India, 1948.
Sharma, K. K. .. Rural Credit and Reserve Bank of India.
Sharma, S. L. .. Technique of Agricultural Marketing in India, 1952.
Shukla, J. B. .. Life and Labour in Gujarat Taluka.
Shukla, J. P. .. Co-operative Rural Development.
Slater, G. .. Some South Indian Villages.
Stamp, L. D. .. Our Underdeveloped World, 1952.
Strickland, C. F. .. (i) Co-operation in India.
 .. (ii) Rural Welfare in India.
Tardy, M. L. .. Systems of Agricultural Credit.
Tewari, R. D. .. Indian Agriculture.
Temple, R. .. Men and Events of My Times in India.
Thomas, P. J. .. The Problems of Agricultural Indebtedness.
Thomas and Ram Krishnan. .. Some South Indian Villages.
Thornier, D. .. Agricultural Prospects in India, 1946.
Vakil, C. N. .. Economic Consequences of Divided India, 1950.
Verma, H. L. .. Pathways of Village Uplift.
Vinoba, Acharya .. Bhoodan to Gramdan, 1956.
Voelcker, J. A. .. Report of the Improvement of Indian Agriculture.
Visvesvaraya, M. .. (i) Nation Building.
 .. (ii) Reconstructing India.
 .. (iii) Prosperity through Industry.
Wadia, P. A. and G. N. Joshi .. Wealth of India.
Wadia and Merchant .. Our Economic Problem, 1957.
Walker, J. N. .. Indian Village Health.
Warriner, D. .. Economics of Peasant Farming.
Wolf, H. .. Co-operation in India.
Yates and Warriner .. Food and Farming in Post-War Europe.
Thornier, D. .. Agricultural Prospects in India, 1956.
U. N. O. .. Land Reforms, Defects in Agrarian Structure, 1951.

(ii) Reports

- Report on Co-operation in India (MacLagan Committee), 1915.
 Report of Industrial Commission (Thomas Holland Committee), 1916-18.
 Report of the Hydro-electric Survey of India (Mears Committee), 1919-21.
 Report of the Royal Commission on Agriculture in India (Linlithgow Commission), 1928.
 Report of the Royal Commission on Labour (Whitley Commission), 1931.

- Report of the Central Banking Enquiry Committee, 1931.
- Report of the Bengal Land Revenue Commission (Floud Commission), 1938-40.
- Report of the Co-operative Marketing of Agricultural Produce in India, 1943.
- Foodgrains Policy Committee Report I, 1943.
- Memorandum on the Development of Agriculture and Animal Husbandry in India (Kharegat Committee), 1944.
- Report on the Marketing of Wheat in India.
- Report on the Marketing of Rice in India.
- Report on the Marketing of Linseed in India.
- Report on the Marketing of Milk in India.
- Report on the Marketing of Groundnuts in India.
- Report of an Investigation on Dairy Industry in India (Pepperall Report).
- Report on the Five Year Dairy Development Plan (Kothawale Report).
- Report of the Labour Investigation Committee, 1945.
- Report of the Health Development and Survey Committee (Bhore Committee), Vol. I, 1946.
- Report of the Co-operative Planning Committee (Sairaya Committee), 1946.
- Report of the Prices Sub-Committee of the Policy Committee on Agriculture, Forests and Fisheries (Krishnamachari Report), 1947.
- Report of the Indian Delegation on Co-operative Farming in Palestine (Shirname Report), 1947.
- Report of the National Planning Committee on :
- (i) Population, (ii) Land Policy and Agriculture, (iii) Rural Marketing and Finance, (iv) Horticulture, (v) River Training and Irrigation, (vi) Soil Conservation and Afforestation, (vii) Animal Husbandry and Fisheries, (viii) Rural Industries, (ix) Crops, 1948.
- Report of the Famine Enquiry Commission (Woodhead Commission), 1945.
- Report showing action taken by Central and Provincial Governments on the Recommendations of the Famine Enquiry Commission (1948).
- Reorganisation of Gaushalas and Pinjrapoles (Datar Singh), 1948.
- Report of the U. P. Zamindari Abolition Committee (Pant Committee), 1948.
- A Note on the Problems of Cattle Insurance under Indian Conditions (Priolker), 1949.
- A Note on the Problems of Crop Insurance under Indian Conditions (Priolker), 1949.
- I. C. A. R. Bulletin No. 73—On All-India Soil Survey Scheme, 1953.
- Report of the Agricultural Finance Sub-Committee (Gadgil Committee), 1949.
- Report on the Work of Imperial Council of Agricultural Research (Russel Report).

Report of the Agricultural Credit Organisation Committee (Nana-wati Committee), Bombay, 1947.

Report on the Co-operative Farming in Bombay : Captain Mohite (1946).

Report of the Agrarian Reforms Committee (Kumarappa Com-mittee), 1949.

Report of the Rural Banking Enquiry Committee (Purshottam Das Thakur Dass Committee), 1951.

Fiscal Commission Report (Krishnamachari Committee), 1950.

Government's First Five Year Plan, (1952).

National Income Committee Report, 1951, Final Report, 1954.

U. P. Panchayat Raj Act, 1947.

Report of the Grow More Food Enquiry Committee (1952).

Report of the Rural Credit Survey Committee, 1954, Vols. I and II.

Draft of the Second Five Year Plan, 1956.

Progress Report of the First Five Year for the period 1953-54, 1954-55 and 1955-56.

Review of the First Five Year Plan, 1957.

Second Five Year Plan, 1956.

Report of the Agricultural Labour Enquiry Committee, Vols. I and II, 1952.

Report on the Intensive Survey of Agricultural Labour, Vols. I, II, III, IV, V, VI, VII, 1955.

Ministry of Food and Agriculture :

(i) Agricultural Legislation in India, Vols. I, II, III and IV, 1952.

(ii) Regulation of Money Lending, Vol. II.

(iii) Consolidation of Holdings, Vol. III.

(iv) Agricultural Wages in India, Vol. I, 1952.

(v) Studies in Agricultural Economics, Vols. I and II.

(vi) Abstract of Agricultural Statistics Annual.

(vii) Average Yield Per Acre of Principal Crops in India.

(viii) Report of the Indian Delegation to China on Agricultural Planning and Techniques, 1957.

(ix) Patil Delegation Report on Agrarian Co-operatives in India, 1957.

(x) Land Reforms in Ind'a, 1956.

(iii) Reserve Bank of India's Publications

Reserve Bank's Bulletin No. :

11. Quick Dispensation of Production Credit.

12. Role of Reserve Bank of India in the Scheme of Agricultural Credit.

19. State Aid to Agriculturists in India.

23. Agricultural Credit in other Countries.

26. Co-operative Farming, 1943.

30. Land Mortgage Bank, 1951.

34. Consolidation of Holdings.

35. Fruit Marketing Co-operatives.

Review of the Co-operative Movement in India for 1939-40.

Ditto	1939-46 (1948).
Ditto	1946-48 (1950).
Ditto	1948-50 (1952).
Ditto	1950-52 (1954).
Ditto	1952-54 (1946).

(iv) **Year Books, Gazetteers, etc.**

Census Report of India for 1921 ; 1931 ; and 1941 ; Census Papers Nos. 1 and 2 (1952) and Census of India, 1951, Vol. I, part I-A.

Indian Year Book, 1943, 1949, 1950 and 1957.

Imperial Gazetteer of India, Vols. I and III.

Year Book and Directory of Co-operation, 1942.

Indian Food Statistics, 1954.

Livestock Census of India, 1956.

Ninth Year, 1956.

Tenth Year, 1957.

India, 1955, 1956, 1957.

(v) **Journals, Magazines, etc.**

Agricultural Situation in India (Monthly).

Rural India (Monthly).

Modern Review (Monthly).

Indian Review (Monthly).

Indian Farming (Monthly).

Indian Journal of Economics (Quarterly).

Economic Review (A. I. C. C.) (Fortnightly).

Indian Journal of Agricultural Economics (Quarterly).

Indian Co-operative Review (Quarterly).

Commercial Annual, 1948, 1949, 1950, 1951, 1952, 1954, 1955, 1957.

Eastern Economist Annual, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1956, 1957.

Indian Farming Special No. Developing Village India, 1946.

Reserve Bank of India Bulletin (Monthly).

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